Consultative Committee for Space Data Systems

REPORT OF THE
MANAGEMENT COUNCIL

CCSDS MANAGEMENT COUNCIL MEETING MINUTES

CCSDS B10.0-Y-15

YELLOW BOOK

November 1997

DISTRIBUTION

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BNSC	Mr. Peter A. Vaughan
CNES	Mr. Roland Ivarnez
CSA	Arvind Bastikar
DLR	Mr. Hubertus Wanke
ESA	Mr. Erhard Jabs
INPE	Dr. Eduardo W. Bergamini
NASA HQ	Mr. David L. Townley
NASDA	Mr. Tsukasa Mito
RSA	Mr. Vladimir Starostine

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SSC	Mr. Lennart Marcus
TsNIIMash	Mr. O.D. Sokolov
USGS	Mr. Tom Kalvelage

Panel/Subpanel Chairmen

P1		Dr. K. Lenhart (ESA/ESOC)
	P1A	Mr. M. Macmedan (NASA/JPL)
	P1E	Mr. Jean Luc Gerner (ESTEC/ESA)
	P1F	Mr. A. Hooke (NASA/JPL)
	P1J	Mr. Felipe Flores-Amaya (NASA/GSFC)
P2		Dr. David Giaretta (BNSC/RAL)
		Mr. Nestor Peccia (ESA)
		Mr. D. Sawyer (NASA/GSFC)
P3		Mr. Maurice Winterholer (CNES)
		Ms. Patricia Lightfoot (NASA/GSFC)
		Mr. J. Kaufeler (ESA/ESOC)
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Information

Mr. G. Delmas (ESA/ESOC)
Mr. M. Drexler (DLR/GSOC)
Ms. Michele LeSaux (SAC/CSIR)
Ms. Linda Kezer (NASA/HQ)
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Mr. R. Stephens (SGT)
Mr. N. Dissinger (ATSC)
Mr. T. Gannett (ATSC)

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SUBJECT: Minutes of the Consultative Committee for Space Data Systems (CCSDS) Management Council (MC) Meeting

PLACE: Oxfordshire, England

DATE: 13-14 November 1997

I. ATTENDANCE:

Organization	Name
BNSC/RAL	Peter Vaughan David Giaretta
CSA	Arvind Bastikar
CNES	Jean Latour Maurice Winterholer
DLR	Manfred Drexler
ESA	Erhard Jabs Klaus Lenhart
INPE	Eduardo W. Bergamini
NASA	David Townley Linda Kezer Adrian Hooke
NASDA	Masami Kashimoto Shinji Ogawa
CASC/CASI	Zhang Liding

II. INTRODUCTION

The meeting was convened by Mr. David Townley, CCSDS Co-Chairman. The Delegates and other attendees introduced themselves.

III. WELCOMING REMARKS

Mr. Peter Vaughan welcomed all attendees and introduced Mr. Eric Dunford, Director of the Science Department at Rutherford Appleton Laboratory. Mr. Dunford extended a welcome to everyone. Mr. Dunford stated that BNSC/RAL is very interested in CCSDS and feels that it is very important for the United Kingdom to have standards.

IV. AGENDA REVIEW AND APPROVAL

The agenda is shown in Attachment A. The MC approved the meeting agenda with the following change:

Item 12. Proposed CEOS standard

V. REVIEW OF MINUTES FROM OBERPFAFFENHOFEN

Ms. Kezer proposed one correction to the draft minutes as follows:

Add to the list of action items: "97-10. Mr. Townley will explore with the NASA Space Station Office the extent to which the ISS will use CCSDS standards. In addition, an invitation will be issued to the ISS Program Office to provide a briefing during the panel meetings at Houston, Texas, during the Spring of 1998."

The minutes were approved with the above amendment.

VI. SECRETARIAT REPORT

The Secretariat's Report (Attachment B) was previously distributed to the members. This report included the CCSDS Documents register; Directories of the CCSDS Member Agencies, Observer Agencies, and Associates; and the CCSDS Spacecraft ID Assignment Table (SCID). Since the SCID table is available on the CCSDS Home Page, this will be the last time the SCID table will be included in the Secretariat's report.

The Secretariat asked for clarification on Resolution MC-S97-22, which approved the electronic distribution of Red Books, with regard to "on the World Wide Web in a location to be accessed from the CCSDS Home Page." The MC agreed that early versions of the Red Books should be in a separate location with limited distribution in electronic form other than PDF format. Once the document is considered to be a stable

document, it would then be put in PDF format and made available from the CCSDS Home Page on the World Wide Web.

Mr. Townley reported that this would be the last meeting of Ms. Linda Kezer as Assistant Secretary to CCSDS. Ms. Kezer has accepted another position within NASA, which precludes her continuing to work with CCSDS.

VII. REVIEW AND REPORT OF OPEN ACTION ITEMS

F96-1. CLOSED. ESA / Mr. Jabs reported that ESA had not been able to identify potential areas for collaboration by sharing of development resources. The planned implementation of SLE Forward and Return Services for Integral and Rosetta, which at first appeared to be a potential area, is constrained by the fact that new developments will not be stand-alone, but extensions / modifications of existing infrastructure (telemetry processors, telecommand encoders) and thus not suitable for sharing. Further, severe constraints will be due to the rather short development period. Mr. Jabs also stated that several implementation constraints due to existing infrastructure will also govern the development of "Turbo Code Equipment." The potential of shared developments in this area needs further investigation.

After discussion, the MC agreed that agencies should keep other agencies informed, through the Agency reports, as to what implementations are being worked.

F96-4. CLOSED. Mr. Jabs reported that the following six SLE services are planned to be implemented during 1998 / 1999 for support of the Integral and (later) Rosetta mission:

- Return all Frame(s) (RAF)
- Forward Virtual Channel (VC) Frame
- Master Channel Operational Control Field (MC-OCF)
- Command Link Transmission Unit (CLTU)
- Telecommand (TC) Frame
- Forward Space Packet Telecommand

ESA also plans to implement WP 316, Other Return SLE services.

Mr. Drexler stated that DLR plans to implement WP 312 (R-VCF) and 313 (R-MC-OCF), as well as WP 322, Forward Telecommand Frame.

Mr. Winterholer commented that the intent of this action was to get help in the development of Recommendations. This intent has been met, therefore, this action was closed.

96-9. CLOSED. Mr. Hooke stated that this had been covered by the change to the procedures manual.

96-10. OPEN. Mr. Bastikar reported he has not received a response from the Canadian Standards Council on the proposed TC 211 archiving draft. He will check on the status of the action upon his return to Canada.

96-14. OPEN. Mr. Townley reported he had not received any information on this action. He will report at the May 1998 meeting.

97-1. CLOSED. A draft certificate had been provided to MC members in September. The certificate was approved for use by the MC.

97-2. CLOSED. The Secretariat provided a draft charter to MC members and Panel Chairmen for review. Comments were received by CNES and NASA. Mr. Townley presented a version incorporating both sets of comments. There was discussion on what the TSG would be doing. Panels would develop plans, the TSG would review and harmonize the plans and submit the plans to the MC for approval. The TSG function is to perform realignment of plans. After further discussion, an action was assigned to the Member Agencies to review the latest draft TSG charter and submit comments to the Secretariat by December 15, 1997 (Action Item No. 97-11). The Secretariat will submit a new draft based on comments, if any, for review and approval by the MC.

97.3. CLOSED.

97.4. CLOSED. There were no questions or comments from the P1A Chairman.

97.5. CLOSED. A proposed vision, change goal and mission was prepared by Mr. Hooke and distributed by the Secretariat in October (see Attachment C). Mr. Hooke commented that the strategic plan needs to be simple and reviewed once a year. It was suggested that an ad hoc committee develop a strawman for guidance to the panels. The process would be to develop agency / mission needs (requirements and technology forecast), then to formulate the strategic plans. It was suggested that perhaps we should have an "Objective" as opposed to "Vision"; i.e., 90 percent of every mission to be 90 percent CCSDS as a possible objective. An action was assigned for all Member Agencies to review and provide inputs to the draft vision statement by December 15, 1997 (Action Item No. 97-12). Each Member Agency delegate should also state why their Agency participates, how they contribute to CCSDS, and describe the environments in which the Agencies anticipate their mission development to occur. Example: The NASA's "faster, better, cheaper" mission set; i.e., more missions in a shorter period of time. The MC also established an ad hoc committee consisting of the Panel Chairmen, Adrian Hooke and Manfred Drexler, to be chaired by the TSG Chairman, to prepare a strawman guidance and template for a strategic plan (Resolution MC-F97-1).

97-6. CLOSED. This action was clarified in that it should have read "identify" their current program of work into the three categories (Standards Technology Studies, Standards Development, Standards Deployment). Mr. Hooke commented that each panel needs to identify what had been committed to for the "core" program. For example, turbo code -- Mr. Hooke stated he could not find anything that states this area has been approved as a CCSDS core program under development. The Panels identified their work as follows:

Panel 3 -- Everything is in the development area.

Panel 2 -- Work Package 200 is in technology, WP 600 is in deployment, and all others are in development.

Panel 1 -- Globally speaking, the majority of work falls within the Standards Development category. There are work packages with content from the other two categories. Work packages with work content of Standards Technology / Research: P200, A430, A440, A520, A620, A630, E210, E220, E230, E260, E310, E320, E360, E370, E380, E381, E390, F420. Work packages with work content of Standards Deployment (including testing): P600, A720, E330, E360, E650.

97-7: CLOSED. It was the consensus that another class of document was not required. A better solution would be to have implementation instructions or workshops. It was suggested that a workshop be developed and this workshop could be provided to other agencies for holding workshops. Mr. Bastikar stated that CSA would be glad to participate in development of a workshops.

97-8. CLOSED. A reminder will be included as a part of each premeeting mail-out package for agencies and panels to provide an electronic version of reports.

97-9. CLOSED. Mr. Bastikar recommended that we not establish a liaison with this single Work Panel of the ITU. After discussion, the MC concluded that it would be more efficient to work with the SFCG and the Data Communications Standards Bureau.

97-10. OPEN. This action, which was an amendment to the draft minutes from May 1997 meeting, was not discussed. Mr. Townley is working the action.

VIII. AGENCY REPORTS:

BNSC: Mr. Vaughan reported that BNSC support to the Panels, Committee and Working Groups of CCSDS has remained stable with substantial support to the work of Panels 1 and 2, and they continue to seek more support for Panel 3. BNSC is still involved in the STRV program. For the STRV-1c/d mission, the RAL S-band antenna will be used in addition to the UK Defence Evaluation and Research Agency (DERA) antenna. The 2nd International Symposium on "Reducing the Cost of Spacecraft Ground Systems and Operation" was considered successful especially in exposing CCSDS to a wide audience, and it appeared that most of the delegates were convinced of their usefulness. BNSC also hosted a workshop on the "Development of ISO Standards for Open Archival Systems," which included a number of attendees from non-space firms and organizations who were interested. NASA/Mr. Hooke commented that STRV-1a/b is still available if anyone is interested in using it to check out ground stations. Please send an e-mail to adrian.hooke@jpl.nasa.gov. Mr. Vaughan's full report is Attachment D to these minutes.

CSA: Mr. Bastikar stated that CSA is in the process of a reorganization . The launch and operation of RADARSAT had been successful and a tremendous amount of work in flood damage in several areas of the world had been accomplished. The data were processed by DERA. Mr. Bastikar reported that all CCSDS standards on RADARSAT were accomplished. One issue reported was that once an instrument developed by CSA (using CCSDS standards) is transferred to a control center, it is not realized within CSA that the standards are being used. Mr. Bastikar reported that CSA would like to increase their manpower. CSA is working on an on-line test bed, which will be finished in the next three months. CSA would also like to work with NASA with on-line testing. Mr. Bastikar's full report is Attachment E to these minutes.

CNES: Mr. Latour reported that CNES has participated in CCSDS Panels 1A, 1F, 2 and 3 and provided the chairmanship of Panel 3 and ISO/TC 20/SC 13. CNES has developed a software tool for turbocode evaluation and simulation and decided to use EAST language recommendations for SPOT. CCSDS Spacecraft Identification Code Assignment has been requested for three new projects: Stentor, Jason and Corot. CNES has also been working the ECSS and ISO/TC 20/SC 14 WG 3. Mr. Latour agreed to provide an electronic version of WD 4950, Satellite Operability, to the Secretariat for distributing to Member Agencies. Mr. Latour's full report is Attachment F to these minutes.

DLR: Mr. Drexler reported that DLR continued its work in CCSDS with emphasis on the work in Panel 3. DLR is very interested in Panel P1J and in particular GPS and time code. Once a work plan is available, an individual will be named to work on this panel. Mr. Drexler provided a list of missions for which DLR has implemented the CCSDS TM/TC packet standard in its ground complex. In summary, Mr. Drexler stated that industry tends not to, or not completely, implement CCSDS standards

partially because of a lack of understanding of the recommendations or lack of money. Mr. Drexler's full report is Attachment G to these minutes.

ESA: Mr. Jabs reported that ESA supported most activities of Panel 1A, with particular emphasis on lossless data compression, turbo codes and lossy data compression. ESA hosted the fall workshop of Panel 2, but had to restrict participation because of limited resources. ESA also presented phase 3 of the "Control Authority Office Systems" and the EOFS-PAE project." Both software packages can be made available for use by other CCSDS member agencies. Mr. Jabs reported that deployment of the packet telemetry and packet telecommand equipment have been delayed and will now take place in the ESA LEOP stations in 1998 and at the Redu station in the first half of 1999. Mr. Jabs's full report is Attachment H to these minutes.

INPE: Mr. Bergamini reported that INPE is committed to the CCSDS program. Related to CCSDS/ISO/TC 20/SC 13, potential application of SCPS and SLE services is being considered. As part of continuing CCSDS support, Mr. Bergamini proposed that a document be established as a practical guide of CCSDS recommendations at the management level; e.g., perhaps an expansion of the brochure. Mr. Bergamini's full report is Attachment I to these minutes.

NASA: Mr. Hooke reported that NASA was able to secure some additional funding in FY 1998, most of which went to Panel 3. NASA completed the transition of the standards program from Code O/Code M to the NASA Space Operations Management Office (SOMO) and established a new management structure for the NASA program. A copy of the new work breakdown structure (WBS) was provided with the NASA report. NASA was asked to provide a list of missions utilizing CCSDS to the MC and Panel Chairs (see Action Item No. 97-12). Mr. Hooke's full report is Attachment J to these minutes.

NASDA: Mr. Kashimoto reported on NASDA's CCSDS telecommand and AOS implementation on various projects. NASDA is studying Panel 3 implementations and monitoring the Panel 2 activities. Mr. Kashimoto's full report is Attachment K to these minutes.

RSA: RSA did not attend the MC meeting but provided their report in Attachment L.

IX. PANEL REPORTS:

Panel 1: During the TSG meeting on 12 November, NASA reported that a new chairman had been appointed for Panel 1J, Mr. Felipe Flores-Amaya of the Goddard Space Flight Center. Mr. Lenhart stated that he was glad to have a new P1J chairman.

Panel 2: Mr. Giaretta presented a proposed resolution that the Secretariat maintain hard copies of standards referenced by CCSDS Recommendations (Blue Books). This resolution was approved with the stipulation that it would be the responsibility of each Panel to provide any references to the Secretariat for retention. (Resolution MC-F97-2)

Panel 2 recommended that the Time Codes be updated in order to allow dates before 1 AD. This item was referred to the TSG.

Panel 2 encouraged those agencies not currently participating in the Open Archival Information System (OAIS) work item, to consider identifying appropriate resources to participate in the OAIS discussions.

Panel 3: Mr. Winterholer proposed the following resolutions, which were approved:

- MC-F97-3. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of the Return All Frames service document as a Red Book. P3 will provide this document to the Secretariat by December 8-15, 1997. The Review period will be for three months.

- MC-F97-4. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of the Forward CLTU service document as a Red Book. P3 will provide this document to the Secretariat by December 8-15, 1997. The Review period will be for three months.

- MC-F97-5. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of the Return MC-OCF service document as a Red Book. P3 will provide this document to the Secretariat by February 9, 1998. The Review period will be for four months.

- MC-F97-6. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of Forward TC Frame service document as a Red Book. P3 will provide this document to the Secretariat by February 9, 1998. The Review period will be for four months.

- MC-F97-7. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of the Forward Space Packet service document as a Red Book. P3 will provide this document to the Secretariat by February 9, 1998. The Review period will be for four months.

Regarding the Return VC-Frame Service document, the MC agreed that once the document is ready and a request is submitted by the Panel Chairman, the Secretariat will send out an electronic request to the MC for approval to release this document as a Red Book. A response to the Secretariat should be provided within one week; no response would indicate approval.

Panel 3 expressed the need for the definition and control of unique naming conventions within CCSDS for spacecraft, agencies and complexes names. During discussion, it was determined that the TSG should address this issue. An action was assigned to the Panels to provide a requirements statement to the TSG. The TSG will then review and provide a recommendation to the MC (Action Item 97-13).

TSG: Mr. Lenhart provided a strawman agenda for the next TSG in May 1998 (See Attachment M). He asked the ad hoc committee established under Resolution MC-F97-1 to review and provide comments via e-mail. MC Members were invited to provide comments also.

X. REPORT FROM LIAISON:

ISO/TC 20/SC 14 -- Mr. Bastikar and Mr. Jabs reported that the next meeting of WG 3 would be held during the week of 17 November 1997 in Tel Aviv. Mr. Jabs reported that the spacecraft operability standard may be proposed as a Committee Draft at next week's meeting. It is not clear whether the Mission Operations Concept will be continued as a work item. The next ISO/TC 20/SC 14 Plenary meeting will be in Bejing in May 1998.

XI. POTENTIAL CCSDS PLENARY

At the last MC meeting, a suggestion had been made to hold a CCSDS Plenary and each Agency was asked to be prepared to discuss the need to hold a plenary and what kind. Mr. Hooke stated that there was a more important need to have a review of the CCSDS with the decision makers within the Agencies. It was suggested that CCSDS might want to look for another opportunity (e.g., COSPAR, IAF) in order to get the most people. Mr. Bastikar also suggested that the CCSDS hold a workshop. The first target should be decision makers (which would not be a CCSDS plenary). A secondary objective would be the system designers. After further discussion, the MC decided that there was no need for a plenary at this time.

Discussion continued on the option of seeking opportunities to brief high-level decision makers. The following actions were assigned:

- INPE/Mr. Bergamini and CSA/Mr. Bastikar are to approach the IAF about a CCSDS session in the fall of 1998. (Action Item No. 97-14)

- All Member Agencies should look at other targets of opportunity to present CCSDS and provide this list to the Secretariat by December 1. Each Agency delegate should follow up on any opportunity he identified and explore with the appropriate group the possibility of CCSDS getting involved. (Action Item No. 97-15)

- The Secretariat will contact ISO Central Secretariat about an article about CCSDS in the ISO newsletter. (Action Item No. 97-16)

XII. NEW BUSINESS

CEOS Catalogue Interoperability Protocol (CIP) -- Mr. Giaretta reported that CEOS would like to propose their CIP as an ISO standard and is looking for a process for progressing this document through CCSDS. An action was assigned to Mr. Giaretta to draft a cover sheet and send to the TSG for review and recommendation at the next MC meeting (Action Item No. 97-17). An action was also assigned to the Secretariat to look at the issue of assigning a document number to documents that are submitted by other agencies (Action Item No.97-18).

A proposal was made by Mr. Hooke at the May 1997 MC meeting to allow the progression of mature Red Books to ISO. Each Agency was asked to consider this proposal for discussion at the fall meeting. After discussion, the MC approved the process of being able to progress stable Red Books to ISO. However, this process would only be utilized on a case-by-case basis (Resolution MC-F97-8). Mr. Hooke recommended that the four Space Communications Protocol Specifications (SCPS) Issue 3 Red Books be submitted to ISO as draft international standards. This recommendation was approved (Resolution MC-F97-9).

Proposed Changes to the Procedures Manual (See Attachment N). It was recommended, and agreed, that the manual be changed from “free and unrestricted” to “widespread” on pages 3-2, 5-1 and B-1. Regarding the proposed change on page 5-1, Mr. Jabs expressed concern that this would prohibit approving any work item that did not have a hardware/software plan. A suggestion was made to change the wording to “All ... NWIs should address the issue of the development of ....” After further discussion, an action was assigned to all Member Agencies to review the proposed wording to the Procedures Manual in light of Resolution MC-S97-21 and suggest appropriate changes in wording to the procedures manual to the Secretariat by December 15, 1997.

XIII. PLANNING FOR NEXT CCSDS MEETINGS

The following schedule was tentatively agreed to:

Spring 1998: Panel meetings and TSG are to be scheduled for Houston, Texas, in 4-15 May. The tentative dates are as follows:

4-8 May	Panel 3
6-8, 13-14 May	Panel 2
4-8 May	Panels 1A, 1F, 1E, 1J
13 May	Panel 1 Plenary
11-12 May	TSG

Panel Chairmen will finalize the date of the meeting.

Ms. Kezer stated the Secretariat would need the various room and other requirements of the Panels as soon as possible to coordinate with the hotel in Houston.

The MC accepted the invitation by the National Space Development Agency of Japan (NASDA) to host the MC on 8-9 June 1998 in Tokyo.

The MC accepted the invitation by the European Space Agency to host the TSG and MC meetings in the fall of 1998 at a place to be determined. The tentative dates will be 4-6 November 1998. ESA/ESOC also extended an invitation to each panel to meet if they desire.

NASA extended a tentative invitation to host the Spring 1999 meetings in the Pasadena, California, area. INPE extended its invitation to host the Fall 1999 meetings.

The MC expressed it appreciation to Ms. Kezer for her support to the CCSDS Secretariat and MC.

On behalf of the MC, Mr. Townley expressed its appreciation to BNSC/RAL and Mr. Vaughan for the excellent facilities and hospitality provided in hosting the Fall meeting.

XIV. APPROVAL OF RESOLUTIONS

Ms. Kezer read the proposed resolutions, which were approved. These resolutions will be distributed within a week.

RESOLUTIONS

CCSDS MANAGEMENT COUNCIL
13-14 November 1997
Oxfordshire, United Kingdom

MC-F97-1. CCSDS resolves to establish an ad hoc committee consisting of the Panel Chairmen, Adrian Hooke and Manfred Drexler, and chaired by the TSG Chairman, to prepare a strawman guidance and template for a strategic plan.

MC-F97-2. CCSDS resolves to direct the Secretariat to maintain hard copies of standards referenced by CCSDS Recommendations (Blue Books). It will be the responsibility of each Panel to provide any references to the Secretariat for retention. The Secretariat will assess which references are currently on file, if any, and provide this list to each of Panels.

MC-F97-3. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of the Return All Frames service document as a Red Book. P3 will provide this document to the Secretariat by December 8-15, 1997. The Review period will be for three months.

MC-F97-4. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of the Forward CLTU service document as a Red Book. P3 will provide this document to the Secretariat by December 8-15, 1997. The Review period will be for three months.

MC-F97-5. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of the Return MC-OCF service document as a Red Book. P3 will provide this document to the Secretariat by February 9, 1998. The Review period will be for four months.

MC-F97-6. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of Forward TC Frame service document as a Red Book. P3 will provide this document to the Secretariat by February 9, 1998. The Review period will be for four months.

MC-F97-7. Recognizing the urgency to have recommendations for the support of the Integral mission, MC resolves to issue the next version of the Forward Space Packet service document as a Red Book. P3 will provide this document to the Secretariat by February 9, 1998. The Review period will be for four months.

MC-F97-8. CCSDS resolves to approve the process of being able to progress stable Red Books to ISO. This process will only be utilized on a case-by-case basis.

MC-F97-9. CCSDS resolves to progress the following Issue 3 Red Books to ISO as draft international standards.

- Space Communications Protocol Specification (SCPS)--Network Protocol (SCPS-NP) (CCSDS 713.0-R) (ISO / CD 15891)
- Space Communications Protocol Specification (SCPS)--Security Protocol (SCPS-SP) (CCSDS 713.5-R) (ISO / CD 15892)
- Space Communications Protocol Specification (SCPS)--Transport Protocol (SCPS-TP) (CCSDS 714.0-R) (ISO / CD 15893)
- Space Communications Protocol Specification (SCPS)--File Protocol (SCPS-FP) (CCSDS 717.5-R) (ISO / CD 15894)

MC-F97-10 . CCSDS resolves to accept the proposal of the National Space Development Agency of Japan (NASDA) to host the Spring 1998 MC Meeting in Tokyo, Japan. The dates will be 8-9 June 1998.

MC-F97-11. CCSDS resolves to accept the proposal of the European Space Agency (ESA) to host the Fall 1998 MC Meeting at a place to be determined. The tentative dates are 5-6 November 1998. The Technical Steering Group (TSG) Meeting is scheduled for 4 November 1998. ESA / ESOC also extended an invitation to each of the panels to meet in conjunction with the MC.

MC-F97-12. CCSDS resolves to tentatively accept the proposal of the National Aeronautics and Space Administration (NASA) to host the Spring 1999 MC meeting in vicinity of the Jet Propulsion Laboratory in Pasadena, California, USA.

MC-F97-13. CCSDS resolves to tentatively accept the proposal of the Instituto Nacional de Pesquisas Espaciais (INPE) to host the Fall 1999 MC meeting in São José dos Campos, Brazil.

MC-F97-14. CCSDS resolves to express its sincere appreciation to Ms. Linda Kezer for her excellent contributions provided to the CCSDS Secretariat and Management Council.

MC-F97-15. CCSDS thanks the British National Space Centre (BNSC) for the excellent support and hospitality provided to the MC at the 13-14 November 1997 meeting in Oxfordshire, United Kingdom.

ACTION ITEMS

CCSDS Management Council Meeting
13-14 November 1997
Oxfordshire, United Kingdom

The following actions were continued from previous meetings:

96-10. Identification of personnel of archiving working group of TC 211 for P2 and the Secretariat. Provide a copy of TC 211 proposed draft.

Assignee: CSA / A. Bastikar
Due Date: January 1998

96-14. Contact NASA ELV and RLV Program Offices to determine the extent that they plan to use CCSDS. If they do not plan to use CCSDS, understand why not.

Assignee: NASA / D. Townley
Due Date: May 1998

97-10. Mr. Townley will explore with the NASA Space Station Office the extent to which the ISS will use CCSDS standards. In addition, an invitation will be issued to the ISS Program Office to provide a briefing during the panel meetings at Houston, Texas, during the Spring of 1998.

Assignee: NASA / D. Townley
Due Date: May 1998

The following new actions were assigned.

97-11. All Member Agencies should review the latest draft of the TSG Charter and submit comments to the Secretariat.

Assignee: All Member Agencies
Due Date: December 15, 1997

97-12. All Member Agencies should review and provide inputs to the draft vision statement. Each Member Agency delegate should also state why their agency participates, how they contribute to the activities of CCSDS, and describe the environments in which the agencies anticipate their mission development to occur. Example: The NASA faster, better, cheaper mission set; i.e., more missions in a shorter period of time.

Assignee: All Member Agencies
Due Date: December 15, 1997

97-13. NASA should provide a list of missions utilizing CCSDS to MC and panel chairs.

Assignee: NASA / Mr. Hooke
Due Date: February 1998

97-14. In response to P3's need for the definition and control of unique naming conventions within CCSDS for spacecraft, agency and complex names, Panels are to provide a requirements statement to the TSG. The TSG will review and provide a recommendation to the MC.

Assignee: Panel and Subpanel Chairmen
Due Date: 15 February 1998

97-15. INPE / Mr. Bergamini and CSA / Mr. Bastikar are to approach the IAF about a CCSDS session in the fall of 1998.

Assignee: CSA / Mr. Bastikar, INPE / Mr. Bergamini
Due Date: ASAP

97-16. All Member Agencies should look at other targets of opportunity to present CCSDS and provide this list to the Secretariat by December 1. Each Agency delegate should follow up on each opportunity identified and explore with the appropriate group the possibility of CCSDS getting involved.

Assignee: Member Agencies
Due Date: (a) List of opportunities -- December 1, 1997
(b) Contact appropriate organization -- January 15, 1998

97-17. The Secretariat will contact ISO Central Secretariat about an article in the ISO newsletter.

Assignee: Secretariat / Mr. Townley
Due Date: ASAP

97-18. With regard to the proposed CEOS Catalogue Interoperability Protocol (CIP), Mr. Giaretta will draft a cover sheet and send to TSG for review and recommendation at the next MC meeting.

Assignee: RAL / D. Giaretta
Due Date: April 1998

97-19. With regard to the proposed CEOS CIP, the Secretariat will look at the issue of assigning a CCSDS document number.

Assignee: Secretariat / Mr. Townley
Due Date: May 1998

97-20. All agencies are to review the proposed wording to the Procedures Manual in light of Resolution MC-S97-21, and suggest appropriate changes in wording to the procedures manual to the Secretariat.

Assignee: All Member Agencies
Due Date: December 15, 1997

97-21. Members of the ad hoc committee established under Resolution MC-F97-1 are to review and comment on the proposed strawman agenda for the May 1998 TSG meeting presented by the TSG Chairman. MC members are also invited to submit comments. All comments should be sent to the TSG Chairman, with a copy to the Secretariat, via e-mail.

Assignee: Ad Hoc Committee; Member Agencies
Due Date: February 2, 1998

ATTACHMENT A

AGENDA

DRAFT AGENDA
CCSDS MANAGEMENT COUNCIL
Oxfordshire, England
13-14 November 1997

1. Call to Order (09:00)
2. Introduction of Delegates
3. Welcoming Remarks
4. Agenda Review and Approval
5. Review of Minutes from Sao Jose dos Campos, Brazil Meeting
6. Secretariat Report
7. Review and Report of Open Action Items
8. Agency Reports
9. Summary Reports from Technical Panels

    - Panel 1*
    - Panel 2*
    - Panel 3*
    - TSG

    NOTE: Only technical items not discussed at the TSG Meeting should be brought forward to the MC.

*Chairperson reports should include (1) resource and schedule status, (2) panel documents requiring MC approval, and (3) an identification of which of that panel's Blue Books should be considered for submission as future ISO standards

11. Report from Liaisons
12. Potential CCSDS Plenary
13. New Business
14. Planning for next TSG/MC meetings
15. Approval of Resolutions
16. Adjourn (not later than 12 noon 14 November)

ATTACHMENT B

SECRETARIAT'S REPORT

CCSDS SECRETARIAT PACKAGE

CCSDS MANAGEMENT COUNCIL MEETING
Oxford, England
13-14 November 1997

- Directory of CCSDS Principal Delegates
- CCSDS Associates List
- CCSDS Document Register
- CCSDS Spacecraft ID Assignment Table

DIRECTORY OF CCSDS PRINCIPAL DELEGATES October 1997

Instructions regarding telephone and facsimile dialing

The telephone and facsimile numbers listed in this directory are given in international format. The "+" sign at the start of each number refers to the whatever digits must be dialed in the country of origin in order to get an international access circuit. For calling within a country, this access code, the country code, and perhaps the city / area code should not be dialed.

Please report any errors, omissions, or changes to this directory to the CCSDS Secretariat at the address/number below.

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CCSDS DOCUMENT REGISTER (BRIEF) **Revision Date: November 1997**

Document Title	Date	Color	Number	Remarks
ADMINISTRATIVE				
CCSDS Global Spacecraft Identification Field Code Assignment Control Procedures	**93-10**	**Blue**	**320.0-B-1**	
CCSDS Global Spacecraft Identification Field Code Assignment Control Procedures	**96-11**	**Blue**	**320.0-B-1 Cor. 1**	**Corrigendum 1**
CCSDS Global Spacecraft Identification Field Technical Specification for Code Assignment	96-09	White	321.0-W-1	On Hold
Procedures Manual for the Consultative Committee for Space Data Systems	96-11	Yellow	A00.0-Y-7	
Achievements and Products	95-04	Yellow	A10.0-Y-5	Draft Yellow Book
An Introduction to CCSDS	97-09	Yellow	A10.1-Y-3	CCSDS Leaflet
CCSDS-Related Implementations	**96-11**	**Green**	**A12.0-G-1**	
CCSDS Publications Manual	94-05	Yellow	A20.0-Y-1	
CCSDS Glossary	**97-07**	**Green**	**A30.0-G-3**	
Report of the Management Council - Meeting Minutes, April 9-10, 1990	90-04	Yellow	B10.0-Y-1	
Report of the Management Council - Meeting Minutes, September 20-21, 1990	90-11	Yellow	B10.0-Y-2	
Report of the Management Council - Meeting Minutes, October 2-3, 1991	91-10	Yellow	B10.0-Y-3	
Report of the Management Council - Meeting Minutes, May 21-22, 1992	92-05	Yellow	B10.0-Y-4	
Report of the Management Council - Meeting Minutes, November 16-17, 1992	92-11	Yellow	B10.0-Y-5	
Report of the Management Council - Meeting Minutes, June 8-9, 1993	93-06	Yellow	B10.0-Y-6	
Report of the Management Council - Meeting Minutes, October 28-29, 1993	93-10	Yellow	B10.0-Y-7	
Report of the Management Council - Meeting Minutes, May 1993	94-05	Yellow	B10.0-Y-8	
Report of the Management Council - Meeting Minutes, November 1994	94-11	Yellow	B10.0-Y-9	
Report of the Management Council - Meeting Minutes, May 1995	95-05	Yellow	B10.0-Y-10	
Report of the Management Council - Meeting Minutes, November 1995	95-11	Yellow	B10.0-Y-11	
Report of the Management Council - Meeting Minutes, May 1996	96-05	Yellow	B10.0-Y-12	
Report of the Management Council - Meeting Minutes, November 1996	96-11	Yellow	B10.0-Y-13	
Report of the Management Council - Meeting Minutes, May 1997	97-05	Yellow	B10.0-Y-14	

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Document Title	Date	Color	Number	Remarks
PANEL 1 DOCUMENTS				
Telemetry Summary of Concept and Rationale	**87-12**	**Green**	**100.0-G-1**	
Telemetry: Summary of Concept and Rationale	97-10	Green	100.0-G-1.4	Draft Green Book
Telemetry Channel Coding	*84-05*	*Blue*	*101.0-B-1*	
Telemetry Channel Coding	*87-01*	*Blue*	*101.0-B-2*	
Telemetry Channel Coding	**92-05**	**Blue**	**101.0-B-3**	**Requires Reconfirmation or Revision**
Packet Telemetry	*84-05*	*Blue*	*102.0-B-1*	
Packet Telemetry	*87-01*	*Blue*	*102.0-B-2*	
Packet Telemetry	*92-11*	*Blue*	*102.0-B-3*	
Packet Telemetry	**95-11**	**Blue**	**102.0-B-4**	
Packet Telemetry Services	**96-05**	**Blue**	**103.0-B-1**	
Lossless Data Compression	**97-05**	**Green**	**120.0-G-1**	
Lossless Data Compression	**97-05**	**Blue**	**121.0-B-1**	
Telecommand Summary of Concept and Rationale	**87-01**	**Green**	**200.0-G-6**	
Telecommand Summary of Concept and Rationale	97-03	Green	200.0-G-6.1	Draft Green Book
Telecommand Part 1 — Channel Service	*87-01*	*Blue*	*201.0-B-1*	
Telecommand Part 1 — Channel Service	**95-11**	**Blue**	**201.0-B-2**	
Telecommand Part 2 — Data Routing Service	*87-01*	*Blue*	*202.0-B-1*	
Telecommand Part 2 — Data Routing Service	**92-11**	**Blue**	**202.0-B-2**	**Requires Reconfirmation or Revision**
Telecommand Part 2.1 — Command Operation Procedures	**91-10**	**Blue**	**202.1-B-1**	**Requires Reconfirmation or Revision**
Telecommand Part 3 — Data Management Service	**87-01**	**Blue**	**203.0-B-1**	**Reconfirmed November 1995**
Time Code Formats	*87-05*	*Blue*	*301.0-B-1*	
Time Code Formats	**90-04**	**Blue**	**301.0-B-2**	**Reconfirmed November 1995**
Radio Frequency and Modulation Systems—Part 1: Earth Stations and Spacecraft	*87-01*	*Blue*	*401.0-B*	
Radio Frequency and Modulation Systems—Part 1: Earth Stations and Spacecraft	*89-09*	*Blue*	*401.0-B*	
Radio Frequency and Modulation Systems—Part 1: Earth Stations and Spacecraft	*93-06*	*Blue*	*401.0-B*	
Radio Frequency and Modulation Systems—Part 1: Earth Stations and Spacecraft	**94-11**	**Blue**	**401.0-B**	**Most recent published version**
Radio Frequency and Modulation Systems—Part 1: Earth Stations and Spacecraft	96-05	Blue	401.0-B	Not yet published
Radio Frequency and Modulation Systems—Part 1: Earth Stations and Spacecraft	97-05	Blue	401.0-B	Not yet published

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PANEL 1 DOCUMENTS (CONTINUED)				
Radio Frequency and Modulation—Part 1: Earth Stations	**97-05**	**Green**	**411.0-G-3**	
Radio Frequency and Modulation Systems—Spacecraft-Earth Station Compatibility Test Procedures	**92-05**	**Green**	**412.0-G-1**	
Report of the Proceedings of the RF and Modulation Subpanel Meeting at the Ames Research Center, April 11-20	89-09	Green	421.0-G-1	
Proceedings of the CCSDS RF and Modulation Subpanel 1E Meeting at the German Space Operations Centre September 20-24, 1993	93-10	Yellow	B20.0-Y-1	
Advanced Orbiting Systems, Networks and Data Links: Summary of Concept, Rationale and Performance	**92-11**	**Green**	**700.0-G-3**	
Advanced Orbiting Systems, Networks and Data Links, Architectural Specification	*89-10*	*Blue*	*701.0-B-1*	
Advanced Orbiting Systems, Networks and Data Links: Architectural Specification	**92-11**	**Blue**	**701.0-B-2**	**Requires Reconfirmation or Revision**
Advanced Orbiting Systems, Networks and Data Links: Audio, Video and Still-Image Communications Services	**94-05**	**Blue**	**704.0-B-1**	
Advanced Orbiting Systems, Networks and Data Links: Audio, Video and Still-Image Communications Services	**94-05**	**Green**	**704.1-G-3**	
Advanced Orbiting Systems, Networks and Data Links: Formal Definition of CPN Protocols, Methodology and Approach	**93-10**	**Green**	**705.0-G-2**	
Advanced Orbiting Systems, Networks and Data Links: Abstract Data Type Library—Addendum to CCSDS 701.0-B-2	**94-05**	**Blue**	**705.1-B-1**	
Advanced Orbiting Systems, Networks and Data Links: Formal Specification of the Path Service and Protocol—Addendum to CCSDS 701.0-B-2	**94-05**	**Blue**	**705.2-B-1**	
Advanced Orbiting Systems, Networks and Data Links: Formal Specification of the VCLC Service and Protocol—Addendum to CCSDS 701.0-B-2	**94-05**	**Blue**	**705.3-B-1**	
Advanced Orbiting Systems, Networks and Data Links: Formal Specification of the VCA Service and Protocol—Addendum to CCSDS 701.0-B-2	**94-05**	**Blue**	**705.4-B-1**	
Space Communications Protocol Specification (SCPS)—Rationale, Requirements, and Application Notes	97-10	Green	710.0-G-0.4	Draft Green Book
Space Communications Protocol Specification (SCPS)—Users Guide (SCPS-UG)	97-09	Green	711.0-G-0.2	Draft Green Book
Space Communications Protocol Specification (SCPS)—Network Protocol (SCPS-NP)	97-09	Red	713.0-R-3	
Space Communications Protocol Specification (SCPS)—Security Protocol (SCPS-SP)	97-09	Red	713.5-R-3	
Space Communications Protocol Specification (SCPS)—Transport Protocol (SCPS-TP)	97-09	Red	714.0-R-3	
Space Communications Protocol Specification (SCPS)—File Protocol (SCPS-FP)	97-09	Red	717.0-R-3	

Document Title	Date	Color	Number	Remarks
PANEL 2 DOCUMENTS				
Space Data Systems Operations with Standard Formatted Data Units: System and Implementation Aspects	**87-02**	**Green**	**610.0-G-5**	
Standard Formatted Data Units -- Structure and Construction Rules	*88-02*	*Blue*	*620.0-B-1*	
Standard Formatted Data Units — Structure and Construction Rules	**92-05**	**Blue**	**620.0-B-2**	**Requires Reconfirmation or Revision**
Standard Formatted Data Units — Structure and Construction Rules	**96-11**	**Blue**	**620.0-B-2 Cor. 1**	**Corrigendum 1**
Standard Formatted Data Units — A Tutorial	**92-05**	**Green**	**621.0-G-1**	
Standard Formatted Data Units — Referencing Environment	**97-05**	**Blue**	**622.0-B-1**	
Standard Formatted Data Units — Control Authority Procedures	**93-06**	**Blue**	**630.0-B-1**	
Standard Formatted Data Units — Control Authority Procedures Tutorial	**94-11**	**Green**	**631.0-G-2**	
Standard Formatted Data Units — Control Authority Data Structures	**94-11**	**Blue**	**632.0-B-1**	
Parameter Value Language Specification (CCSD0006)	**92-05**	**Blue**	**641.0-B-1**	**Requires Reconfirmation or Revision**
Parameter Value Language — A Tutorial	**92-05**	**Green**	**641.0-G-1**	
Language Usage in Information Interchange Tutorial	**89-10**	**Green**	**642.1-G-1**	
ASCII Encoded English (CCSD0002)	**92-11**	**Blue**	**643.0-B-1**	**Requires Reconfirmation or Revision**
The Data Description Language EAST Specification (CCSD0010)	**97-05**	**Blue**	**644.0-B-1**	
The Data Description Language EAST — A Tutorial	**97-05**	**Green**	**645.0-G-1**	
The Data Description Language EAST — List of Conventions	**97-05**	**Green**	**646.0-G-1**	
Data Entity Dictionary Specification Language (DEDSL) (CCSD0011 / CCSD0012)	96-11	Red	647.0-R-1	

Document Title	Date	Color	Number	Remarks
PANEL 3 DOCUMENTS				
Introduction to CCSDS Cross Support	**90-06**	**Green**	**910.0-G-1**	
CCSDS Cross Support System Description Volume 1	**90-06**	**Green**	**910.1-G-1**	
Standard Terminology, Conventions, and Methodology (TCM) for Defining Data Services	**94-11**	**Green**	**910.2-G-1**	
Cross Support Concept — Part 1: Space Link Extension Services	**95-05**	**Green**	**910.3-G-1**	
Cross Support Reference Model Part 1: Space Link Extension Services	**96-05**	**Blue**	**910.4-B-1**	
PANEL 4 DOCUMENTS				
Radio Metric and Orbit Data	**87-01**	**Blue**	**501.0-B-1**	**Reconfirmed May 1994**

WORLD DATA CENTER A FOR SPACECRAFT AND ROCKETS:
ACTIVE CCSDS SPACECRAFT ID ASSIGNMENTS FOR FRAMES / VCDUs

****
* UNASSIGNED ID's MAY NOT BE ADOPTED BY PROJECT OFFICES.*
* ONLY THE WDC-A-R&S CAN ASSIGN/APPROVE CCSDS ID's, *
* REQUESTED THROUGH ANY AGENCY/NATIONAL REPRESENTATIVE.*
****

VERSION 1 (VN=00); SCID = 10 Bits; GSCID = VN.SCID

COMMON NAME OF SPACECRAFT	GSCID (BINARY)	GSCID (HEX)	PERSON/AFFILIATION REQUESTING ID	ASSIGN DT! INITIAL	Fn
Space Telescope	000000111010	3A	G.M. Levin/GSFC/NASA		
Nimbus 7	000000100110	26	F. Akers/GSFC/NASA		
GRO	000001001100	4C	J.J. Madden/GSFC/NASA		
EURECA	000000101101	2D	G.F. Block/ESTEC/ESA		
ERS-1	000001011010	5A	G.F. Block/ESTEC/ESA		
Mars Observer	000010110100	B4	J.K. Erickson/JPL/NASA (1)		
Mars Obser(SIM)	000010110101	B5	K. Moyd/JPL/NASA	18JAN93,RP	
ASTRO-SPAS	000000000001	01	H. Uhrig/ESA (2)		
ASTRO-SPAS Sim.	000000000010	02	H. Uhrig/ESA		
ISO	000010001101	8D	H. Uhrig/ESA (2)		
ISO Simulator	000010001110	8E	H. Uhrig/ESA		
Radarsat	000011001001	C9	W. E. Threinen/CSA		
ERS-2	000000000011	03	H. Uhrig		
ERS-2 Simulator	000000000100	04	"" ""		
CRAF	000001010001	51	J. N. Scott/GSFC		
CRAF-Simulator	000001011011	5B	J. N. Scott/GSFC		
Cassini	000001010010	52	J. N. Scott/GSFC		
Cassini-Sim.	000001011100	5C	J. N. Scott/GSFC		
SOHO	000000010101	15	H. K. Uhrig/ESA		
SOHO-Simulator	000000010110	16	"" ""		
ARIANE 5	000000011010	1A	R. Simo-Pons/CNES	20MAR92	RP
SAMPEX	000010110000	B0	J. N. Scott/GSFC	06JUN92	RP
SAX	000010110001	B1	H. K. Uhrig/ESA	26JUN92	RP
SAX Simulator	000010110010	B2	H. K. Uhrig/ESA	26JUN92	RP
FAST	000010110011	B3	J.N.Scott/GSFC	20NOV92	RP
SWAS	000010110110	B6	J.N.Scott/GSFC (4)	18JAN93	RP
HUYGENS	000010110111	B7	H.K.Uhrig/ESA (5)	09FEB93	RP
HUYGENS	000010111001	B9	H.K.Uhrig/ESA (5)	28APR93	RP
HUYGENS-Simulat	000010111000	B8	H.K. Uhrig/ESA (5)	09FEB93	RP
MESURpathfinder	000000110101	35	J.N.Scott/GSFC (6)	02FEB94	RP
MESURpf-Simulat	000001010100	54	J.N.SCOTT/GSFC (7)	02FEB94	RP
OERSTED	000011000101	C5	H.K. Uhrig/ESA	12NOV93	RP
OERSTED-SIM	000011000110	C6	H.K.Uhrig/ESA	12NOV93	RP
ENVISAT	000011000111	C7	H.K.Uhrig(Reuse.) (8)	12NOV93	RP
EOS-AM-1(CTIU-1)	000010101001	A9	J.N.Scott/GSFC (9)	02FEB94	RP
EOS-AM-1(CTIU-2)	000010101010	AA	J.N.Scott/GSFC (9)	02FEB94	RP
LANDSAT7(CTIU-1)	000001010101	55	J.Deskevich/GSFC(10)	01SEP94	RP
LANDSAT7(CTIU-2)	000001010110	56	J.Deskevich/GSFC(10)	01SEP94	RP
NEAR (TLM,TC)	000011000100	C4	J.Deskevich/GSFC	30NOV94	RP

TRACE (TLM,TC)	000010001111	8F	J.Deskovich/GSFC	14FEB95	RP
ARTEMIS	000010001110	8E	H.Uhrig/ESA	14FEB95	RP
ARTEMIS (SIM)	000010001101	8D	H.Uhrig/ESA	14FEB95	RP
ETS-7 (TC)	000011100111	E7	N. Iwasaki/NSDA	18APR95	RP
ROCSAT-1 (TC)	000001101000	68	J.J.Lee/NSPO	12JUL95	RP
HOT BIRD 2(TLM)	000011110000	F0	H. Uhrig/ESA	31JUL95	RP
HOT BIRD 3(TLM)	000011110001	F1	H. Uhrig/ESA	31JUL95	RP
HOT BIRD 4(TLM)	000011110010	F2	H. Uhrig/ESA	31JUL95	RP
HOT BIRD(SWSIM)	000011110011	F3	H. Uhrig/ESA	31JUL95	RP
HOT BIRD(HWSIM)	000011110100	F4	H. Uhrig/ESA	31JUL95	RP
XMM (TLM/TC)	000011000001	C1	H. Uhrig/ESA	19SEP95	RP
XMM(SIM)	000011000010	C2	H. Uhrig/ESA	19SEP95	RP
WIRE (TLM/TC)	000010011001	99	J.Deskevich/GSFC	16OCT95	RP
MTI (TLM)	000010100001	A1	J. Deskevich/GSFC	02JAN96	RP
MTI (TC)	000010100010	A2	J. Deskevich/GSFC	02JAN96	RP
MSG-1(TC/TLM)	000101000001	141	R. Wolf/EUMETSAT	26FEB96	RP
MSG-2(TC/TLM)	000101000010	142	R. Wolf/" "	26FEB96	RP
MSG-3(TC/TLM)	000101000011	143	R. Wolf/" "	26FEB96	RP
MSG-4(TC/TLM)	000101000100	144	R. Wolf/" "	26FEB96	RP
AXAF-1(TC)	000000000101	5	J.Deskevich/GSFC	06MAR96	RP
KOMPSAT-1 (TC))	000000000110	6	E.Sim/Korea ARI	05JUN96	RP
FUSE (TC)	000000000111	7	J.Deskevich/gsfc	24JUN96	RP
GRAVITY PROBE-B	000001000111	47	J. Deskevich	24JUN96	RP
METOP1(TLMTC,S-)	000000001011	0B	H.Uhrig/ESA	01JUL96	RP
METOP2(TLMTC,S-)	000000001100	0C	""	""	
METOP3(TLMTC,S-)	000000001101	0D	""	""	
METOP-SIM (S-)	000000001110	0E	""	""	
EUTELSAT-F1(S-)	000000001111	0F	""	""	
EUTELSAT-F1(Ku)	000000010000	10	""	""	
EUTELSAT-F2(S-)	000000010001	11	""	""	
EUTELSAT-F2(Ku)	000000010010	12	""	""	
EUTELSAT-F3(S-)	000000010011	13	""	""	
EUTELSAT-F3(Ku)	000000010100	14	""	""	
EUTELSAT-SIM(S)	000000011011	1B	""	""	
EUTELSAT-SIM(Ku)	000000010111	17	""	""	
SESAT-F1(TLMTC)	000000011000	18	""	""	
SESAT-SIM(TLTC)	000000011001	19	""	""	
HOTBIRD-5(TLM)	000000011100	1C	""	""	
SNOE (TLM/TC)	000011010001	D1	J.Deskevich/GSFC	30SEP96	RP
SIRIUS2(TLM/TC)	000011010010	D2	E.Jabs/ESA	17OCT96	RP
SIRIUS2(SIM)	000011010011	D3	E.Jabs/ESA	17OCT96	RP
STARDUST(TLM/TC)	000000011101	1D	J.Deskevich/GSFC	24NOV96	RP
DS1 FLIGHT "	000000011110	1E	"	24NOV96	RP
TS BALLOON*	000000011111	1F	O.Cosentino/ASI	24NOV96	RP
(*Transmed Balloon)					
Cluster-A	000010010000	90	E.Jabs;H.Uhrig/ESA	05DEC96	RP
Cluster-B	000010010001	91	"" ""	"	
Cluster-C	000010010010	92	"" ""	"	
Cluster-D	000010010011	93	"" ""	"	
Cluster (Spare)	000010010100	94	"" ""	"	
Cluster-Sim.-A	000010010101	95	"" ""	"	
Cluster-Sim.-B	000010010110	96	"" ""	"	

[ALL CLUSTER ID's WERE CANCELLED BY ME IN JULY 96; NOW REASSIGNED AT JABS REQUEST BY PHONE CALL TO ME. JABS WILL SURRENDER ID's, IF CLUSTER COULD

```
NOT BE RESURRECTED....RP,5 DEC 96]
MARS SURVEYOR-
LANDER98TLM/TC  000001110100 !  74 ! J.Deskevich/gsfc     16DEC96 RP
MSL98 (SIM)     000000111100 !  3C !         "               "
MARS SURVEYOR-                              "               "
ORBITOR98TLM/TC 000001111111 !  7F          "               "
MSO98 (SIM)     000001111000 !  78 !        "               "
NILESAT-1(TLMTC)000000100111    27 ! E.Jabs/ESA           24DEC96 RP
CARIBSTAR(TLMTC)000000101000!   28 !    "                   "
AFRISTAR(TLMTC) 000000101001    29 !    "                   "
ASIASTAR(TLMTC) 000000101010    2A !    "                   "
ST-1 (TLM/TC)   000000101011    2B !    "                   "
ASTRA 2B(TLM/TC)000000101100    2C !    "                   "
ROSETTA (TLM/TC)000010010111    97 !    "                 10JAN97 RP
ROSETTA (SIM)   000010011000    98 !     "                   "
ARBSAT2PFM(TLMTC)000010000111   87 ! E.Jabs/ESA           24JUL97 RP
ARBSAT2FM2(TLMTC)000010001000   88 ! E.Jabs/ESA           22JUL97 RP
ARABSAT 2(SIM)  000010001001    E1 !   "                    "
EO-1 (TLM/TC)   000100000001   1E4 ! J.Deskevich          25AUG97 RP
ABRIXAS(Eng)    000111100001   1E1 ! H.Wanke/DLR          04SEP97 RP
ABRIXAS(Flt)    000111100100   1E4 ! H.Wanke/DLR          04SEP97 RP
CHAMP           000111100010   1E2 ! H.Wanke/DLR          04SEP97 RP
TIMED(TLM/TC)   000111100011   1E3 ! J.Deskevich          11SEP97 RP
ETS-VIII(TC)    000011101000    E8 ! T.Mito/NASDA          24SEP97 RP
LUNAR-PROSPECTER000010011011    9B ! J.deskevich          30SEP97 RP
-------------------------------------------------------------------
-------------------------------------------------------------------

            VERSION 2 (VN=01); SCID=8 Bits; GSCID = VN.SCID
            -----------------------------------------------
Sp.St.Freedom     0100011000 ! 118 ! J. N. Scott/GSFC (3)  !27MAR92 RP
TOMS-EP-1         0100011001 ! 119 ! J. N. Scott/GSFC      !06JUN92 RP
TOMS-EP-2         0100011010 ! 11A ! J. N. Scott/GSFC      !06JUN92 RP
ENVISAT           0111000111 ! 1C7 ! H.Uhrig/ESA      (8)  !16NOV93 RP
XTE(xray-time-exp)0101101001 ! 169 ! J. N. Scott/GSFC      !19NOV93 RP
EOS-AM-1(TM)      0100101010 ! 12A ! J.N.Scott/GSFC   (9)   02FEB94 RP
LANDSAT7(TLM)     0100010101 ! 115 !J.Deskevich/GSFC  (10)  01SEP94 RP
GLOBE(TLM)        0100000011 ! 103 !J.Deskovich/GSFC        16SEP94 RP
ETS-7(TLM)        0111100111 ! 1E7 ! N.Iwasaki/NSDA         18APR95 RP
ROCSAT-1 (TLM)    0101101000   168 ! J.J.Lee/NSPO           12JUL95 RP
ADEOS-2 (TLM)     0110100010   1A2 ! N.Iwasaki/NSDA         20JUL95 RP
AXAF-I  (TLM)     0100000110   106 ! J.Deskevich/GSFC       20MAR96 RP
PLANET-B (TLM)    0100000111   107 ! I. Nakatani/ISAS       16APR96 RP
LUNAR-A (TLM)     0100001000   108 ! I. Nakatani/ISAS       16APR96 RP
KOMPSAT-1 (TLM)   0100001001   109 ! E. Sim/Korea ARI       05MAY96 RP
FUSE (TLM)        0100001010   10A ! J.Deskevich/gsfc       24JUN96 RP
METOP1(TLM,TC,X-) 0100001011   10B ! H. Uhrig/ESA           01JUL96 RP
METOP2(TLM,TC,-X) 0100001100   10C     ""                      ""
METOP3(TLM,TC,-X) 0100001101   10D     ""                      ""
METOP-SIM (X-)    0100001110   10E     ""                      ""
METEOR 3M-1 (TLM) 0100011101   11D    O.D Sokolov RSA       15JUL96 RP
ISSA-JEM          0100001111   10F    T.Mito/NASDA          03JUN97 RP
ASTRO-E (TLM)     0100000101   105    T.Yamada/ISAS         15SEP97 RP
ETS-VIII          0111101000   1E8    T.Mito/NASDA          24SEP97 RP
```

CANCELLED ASSIGNMENTS; NOW AVAILABLE FOR NEW MISSIONS

Mission	Binary	Hex	Assignee	Date Cancelled
ISEE-1	000001110100	74	J.L Green	5 Feb 95 (Reuse)
ISEE-2	000011101000	E8	"	" (Reuse)
ISEE-3	000011001101	CD	"	" (Reuse)
DE-1	000010000111	87	"	" (Reuse)
DE-2	000000010011	13	"	" (Reuse)
STS-3/OSS-1	000010011000	98	"	" (Reused)
ENVISAT	000011000111	C7	H.Uhrig	16 Nov 93 (Reuse)

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ATTACHMENT C

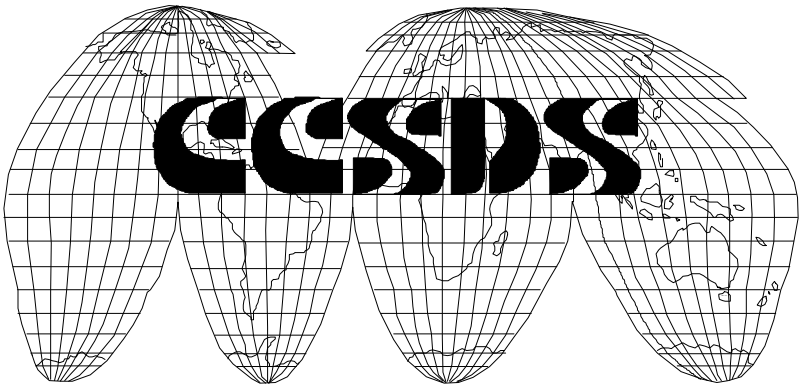
DRAFT VISION, CHANGE GOAL AND MISSION

Consultative Committee
for
Space Data Systems

CCSDS:
Vision, Change Goal and Mission

Management Council Review Draft 1
97-10-07

Prepared by:
Adrian J. Hooke, NASA Space Operations Management Office



Vision

Our vision is to be the recognized world leader in advocating standardized mission operations across the international space community so as to produce first quality mission results while simultaneously realizing significant cost savings for all participants.

Change Goal

Our change goal is to enable the space community to avoid unnecessary mission operations system redesign and duplication by replacing mission-unique systems with a set of standard operations services that display a high level of flexibility and adaptability to mission characteristics and interfaces.

Mission

Our mission is to provide the forum whereby space agencies can reach voluntary consensus on solutions to common problems associated with conduct of space mission operations, with the products of that consensus being made available to the space community in the form of recommended international standards. As such, we provide the environment and infrastructure whereby:

* The international space community can openly discuss common operational problems with a view towards identifying where standard solutions will be beneficial.
* Technical experts within that community are provided with the resources required to develop the necessary recommendations for "open" standards (which are "open" in the sense that they are independent of any proprietary mechanisms for their implementation).
* The community can formally review and comment on those standards as their development progresses, and can approve their publication when complete.
* The recommended standards are made freely available for adoption and use across the international space community.
* Technical resources are provided to assist with their interpretation and implementation.

In executing this mission we will:

* Advocate the use of available standards where advantageous.
* Develop new critical standards where existing standards are inadequate.
* Open the standardization process, on a voluntary basis, to all interested parties across the government, private sector and academic space communities of the world.
* Encourage partnerships between space agencies and the private sector to implement the standards within mission operations designs that are scaleable, rapidly implementable, and low-cost.
* Meet our challenges by organizing our work to promote standardization across the three service domains that are indicated in Figure 1:
    - *Space Data Communications Services* that support mission applications which traverse the data networks that interconnect the space and ground segments of the operations system.
    - *Space Data Interchange Services* that allow users to access and exchange information across a data network. While such exchange normally occurs wholly within the ground segment of the operations system, it is possible to extend the Space Data Interchange Services into the space segment by running them over the Space Data Communications Services.
    - *Space Network Cross Support Services* that are needed to extend the Space Data Communications Services across the ground segment of the operations system. This is normally required because, for reasons of protocol compactness and efficiency, the raw space communications services are rarely designed to be able to independently traverse the ground segment.

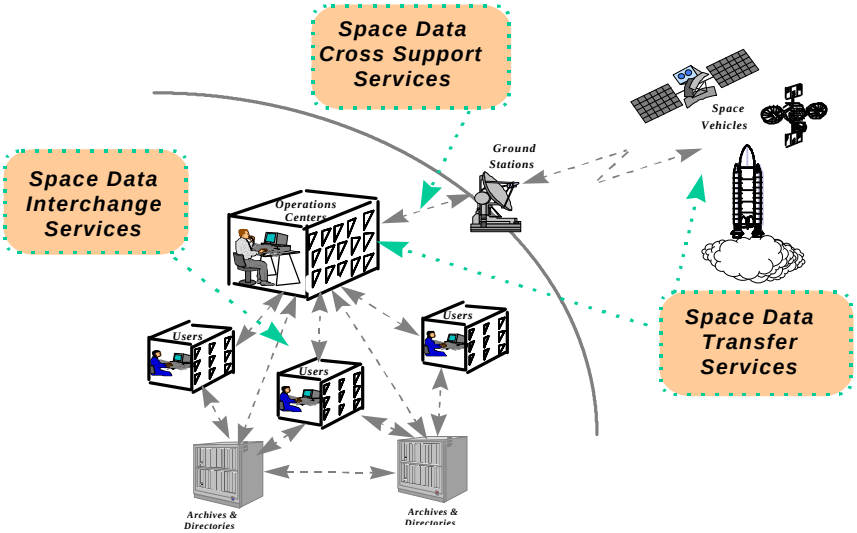


Figure 1: Domains of Standardization

ATTACHMENT D

BNSC REPORT

BNSC Report to the CCSDS Management Council 13.11.97

The BNSC support to the Panels, Committees and Working Groups of the CCSDS has remained stable with substantial support to the work of Panels 1 and 2. We continue to seek more support for Panel 3.

Our contributions to Panel 1 again included a substantial influence from the efforts of the UK Defence Evaluation and Research Agency (DERA) and their Satellite Technology Research Vehicles (STRV). STRV-1a/b remained in use for CCSDS Packet Telecommand and Telemetry testing and SRTV-1c/d is due for launch in 1999.
The DERA S Band ground antenna is CCSDS compatible and the S Band antenna at RAL will be upgraded to handle CCSDS telemetry and telecommand in support of the STRV 1c/d mission.

For Panel 2 there has been the ongoing work of the Panel and in particular the archiving work and the initiative to provide a rationale and discussion paper on the cost effectiveness of Panel 2 recommendations. Also RAL has continued with the development of software tools for use with the DEDSL and access to data entities.

The 2nd International Symposium on "Reducing the Cost of Spacecraft Ground Systems and Operations" was organised by RAL and held at Keble College, Oxford from 21 to 23 July 97. This included a number of papers plus a Plenary session on CCSDS matters and it was clear that the application of the CCSDS recommendations are having an increasing impact on cost savings. It was also a good opportunity to give publicity to the CCSDS recommendations and the CCSDS products (both Software and hardware) and it appeared that most of the Symposium delegates were convinced of their usefulness.

A BNSC Workshop was also held in London on 10.9.97 on the "Development of ISO Standards for Open Archival Systems". This generated a lot of interest with some 40 attendees from government and UK industry with a number from non-space firms and organisations keen to find advanced and cost effective solutions to new and existing archival situations. They were impressed by the adoption of the CCSDS recommendations by ISO and then by the BSI.

The resources provided in support of the CCSDS work in the UK comes from RAL, DERA and UK industry and is for Panel and Committee support together with generation of CCSDS products and testing of the recommendations, plus commercial developments of CCSDS compatible products such as the MMS coders and the SIL packetiser/depacketiser. Excluding the commercial effort the total support amounts to around 2 staff years per year plus travel expenses and we would expect this to continue at the same level.

P Vaughan, BNSC 10.11.97

ATTACHMENT E

CSA REPORT

(Report not available during time of publication.)

ATTACHMENT F

CNES REPORT

CNES REPORT

CCSDS MANAGEMENT COUNCIL

OXFORD,ENGLAND. November 1997

INTRODUCTION

- CNES has participated in CCSDS panels 1 A, 1F, 2 and 3.
- CNES continues to provide the chairmanship of Panel 3 with M . Winterholer and the chairmanship of ISO/TC 20/ SC 13 with J. Latour .
- CNES maintains its interest for CCSDS activities. But CNES can not continue to support all working subgroup, as noted in CNES Report in May.
- The main criteria for priority definition will be the applicability of new recommendation to identified project(national or international)
- The internal resources for CCSDS are equivalent to 3 man-years.

NEW IMPLEMENTATION OF CCSDS RECOMMANDATIONS

- CNES has developed a software tool for "Turbocode" evaluation and simulation.
- CNES has decided to use EAST language recommandations for SPOT numerical archiving process .
- CNES will Request officially for CCSDS Spacecraft Identification Code Assignement for following projects: Stentor (launching June 2000), Jason (launching Mars 2000), Corot (Launching End of 2001)

CNES SUPPORT TO CCSDS ACTIVITIES

- CNES has supported the review of following Red Books :

  647 .0 R-1 Data entity dictionary Specification language

  25 Rids have been addressed to ESOC by CNES.

  713.0-R SCPS-NP

  713.5-R SCPS-SP

  714.0-R SCPS-TP

  717.0-R SCPS-R

  CNES provided comments during working meeting

- CNES activities into Panels are following:

  Panel 1 A Tests about Turbo Code recommandation performed by CNES are finished.

  CNES has developed a Software tool for turbo code evaluation and simulation.

  CNES will propose this tool into working group.

  CNES has performed the French translation for 121-0-B1 Lossless Data Compression.

  Panel 1 F CNES has analysed SCPS Red Books for the working meeting in July.

  CNES is analysing the ESA proposal for (FTPP) File Transfer Packet Protocol.

  Panel 1 J CNES is always ready to participate to panel P 1 J but CNES has not received documentation from P 1 J Chairman.

  Panel 2 CNES has actively supported all activities of Panel 2.

  Reviewing of 647.0-R1.

  Comments about 650.0-W.2.0 Reference model for an open archival information systems.

  Panel 3 CNES continue to support all areas of work in Panel 3, but manpower for Panel 3 is decreasing.

  CNES participated actively in the process for production of SLE red books and in the translation in French for 910-4-B-1. (Cross Support Reference Model Part 1: Space Link Extension Services)

  CNES proposed to participate in S L E validation activities

OTHER SPACE STANDARDISATION ACTIVITIES

- CNES is working for ECSS (European Cooperation for Space Standardisation), notably in drafting group E 70 Space Engineering Ground Systems and Operation and for ISO/TC20/ SC 14 /WG 3 in following drafting groups :

  WD 14620 Launch Operations (in Committee Draft)

  WD 14950 Satellite Operability (in Committee Draft)

ATTACHMENT G

DLR REPORT

MC1197

DLR- GSOC
Status Report to the CCSDS Management Council
Meeting at
Rutherford Appleton Laboratory
Nov. 13th - 14th 1997

DLR continued its work within the reporting period in CCSDS with emphasis on the work in panel 3. Information is forwarded to the MC with this report with respect to DLR-GSOC's experience applying CCSDS standards for certain projects and some thoughts concerning the overall CCSDS workflow.

1. Panel related report

1.1. Panel 1

DLR contribution for P1 is as follows

- Panel 1A: TM/TC/Time:

DLR continues to stay in a monitoring role.

- Panel 1E: RF/Mod:

In May 1997 a report was generated, comprising all agency ground-stations; it contains also the DLR Weilheim Ground Station and the DLR-DFD facilities including those in Neustrelitz. Since last MC, DLR went through compatibility tests for the EUQATOR-S and EUTELSAT W24 spacecraft. Those tests were based on the CCSDS report 'Spacecraft-Earth Station Compatibility Test Procedures'.
The new Ku-band ground station in Weilheim was built upon the recommendations for 'Radio Frequency and Modulation Systems'.
DLR will continue in future to support the important work of P1E with the manpower allocated.

- Panel 1F:SCPS:

The TCP/IP space link extension is an important function for missions. No inputs were received by DLR from the work of this panel. GSOC will stay in a monitoring role for P1F.

- Panel 1J:

DLR is interested in the work of P1J, comprising the area of GNSS (GPS) and new time code. The plan of work is still not available from P1J and should be forwarded.

1.2. PANEL 2

No activity.

1.3 PANEL 3

At the Villafranca P3 meeting three new white books in WG2/3 were produced by the agencies. The Return VC White Book, which should be produced as well, could not be done because of manpower problems at NASA/JPL. From DLR the following new White Books were delivered:
- Return MC-OCF,
- Forward TC-Frame.

The missing VC White Book will be generated by DLR till mid of December.
All P3 WG2/3 White Books should go into red status during the December-February time frame.
At the meeting in Villafranca, Mr. Pilgram took over the chairmanship of WG 3. This was accepted by panel 3 unanimously. DLR will stay in this role with the man power allocated in 1997 also during 1998.

2. DLR-GSOC CCSDS IMPLEMENTATIONS

DLR has implemented the CCSDS TM/TC packet standard in its ground complex for the projects below. Also, P3 related software is under design to be implemented in the service handling between the GSOC Control-Center in Oberpfaffenhofen and the GSOC Ground-Station in Weilheim.
Following is the scenario for CCSDS based space-crafts planned at GSOC for mission operations:

	Launch	Uplink			Downlink		
		Packets	Frames	Code	Packets	Frame	Code
EUTELSAT	3/98	Y	Y	Y	-	Y	Y**
ABRIXAS	8/98	Y	Y	Y	Y*	Y***	Y**
CHAMP	7/99	Y	Y	Y	Y*	Y	Y**
BIRD	7/99	.....		****.		.....	

* : no segmentation
** : no R-S coding
*** : no 1st header pointer for VC-dump
****: extent under definition, most probably CCSDS not used

Looking on the project scenario above the following experiences can be reported:

EUTELSAT:
The onboard implementation in packed TLM/CMD is compatible with the CCSDS part of the GSOC ground system.
CHAMP:
The onboard system was designed in line with the CCSDS Standards on the VC and packet level, but additional Non-CCSDS compatible “Application Packages” were introduced by the manufacturer.
For dump data (science data) down link, an additional, very special Non-CCSDS specific format, was implemented additionally by the manufacturer.
ABRIXAS:
Similar comment as CHAMP

BIRD:
Low cost approach will probably force the manufacturer not to implement CCSDS, because of existing and therefore cheap H/W from previous projects.

Summary:

Industry tends not, or not completely to implement CCSDS standards because of
- lack of understanding of the recommendations
- lack of money to implement CCSDS functionality from scratch
- existing and therefore cheaper hardware from previous missions
- lack of special CCSDS standard in the special case of memory dump data (to be analysed) .

with all the implications to the control-centre.

An additional issue for the control-centre software for the missions above was, that the manufacturers databases in the checkout systems (EGSE TM/TC databases) are all different and therefore should be standardised. The transformation and verification process into the control-centre databases required, was a big effort in all cases.
This is a new work item, DLR-GSOC proposes for panel 2, interfacing with ISO-SC14.

3. MC / TSG/ General Issues

DLR as a CCSDS member agency will continue the support of the CCSDS management council and the work in TSG. It is however still unclear how the correct distribution of work between TSG and MC is defined. In our opinion TSG should act as a coordinator and provide suggestions and material to the MC to make decisions.
This activity should then within the MC be directed towards the achievement of an integrated set of CCSDS standards.

Nevertheless, the experience above forces us to state, that not only the technical aspects are important, but TSG should endeavour to establish suitable material for CCSDS, also in the view of briefing of potential implementers in the use of the recommendations and arrange implementers work shops. Also some registration activity and monitoring of implementations available within the agencies by TSG would be useful. This would enhance cross support capabilities and exchange of software and hardware developed.

Having this in mind we have noticed, that some activity should possibly be redirected or reviewed in the context above.
As an example, panel 2 has completed some work, which could be expanded for a CCSDS level activity (Control Authority and Registration) by broadening it to operations or implementation related issues. This should also be allocated to TSG, but probably belongs more properly to panel 3.

Also we believe, that panel 3, which is defining the data services, is in an ideal position to take over related work for higher level operations services, due to the systems aspects in process for all CCSDS related recommendations (augmented by some TSG members).
Thoughts can be given on the distribution of work between TSG and panel 3, but alternative and additional solutions could include the realignment of panel work, particularly between P1 and P2.
A possible solution in any case must take into account the steadily decreasing budgets of the agencies with respect to CCSDS.

Hubertus Wanke
CCSDS Representative
DLR- GSOC

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ATTACHMENT H

ESA REPORT

ESA Report to CCSDS Management Council at RAL, UK,
13/14 November 1997

1. Introduction

ESA continued to support CCSDS at all levels:

- by active participation in all technical panels, however, with particular emphasis on panel 3
- by providing the chairman of Panel 1 and of the TSG
- by participating in MC meetings

ESA also undertook various study activities (with the help of industry) in direct support of panel activities and in preparation of planned future work.

2. Support of Technical Panels

Panel 1 A: ESA supported most of activities of Panel 1 A, although the Agency has only one active Panel 1 A delegate. Particular emphasis was placed on Lossless Data Compression and Turbo Codes (in cooperation with panel 1 E). ESA started also study work on Lossy Date Compression and potential improvements of TC Recommendation part 2.1.

ESA will support the forthcoming workshop in South Africa.

Panel 1 E: ESA hosted the April workshop in Paris, accepted to take over chairmanship for Panel 1 E and continued to participate in all panel activities.

Panel 1 F: ESA hosted the July meeting at ESTEC. Although ESA has no strong interest in SCPS protocols it supported the review of relevant documents. ESA is strongly interested in the Non-Interactive File-Transfer-Protocol and participated in study and drafting activities.

Panel 1 J: ESA has appointed a delegate for participation in Panel 1 J work, and regrets that this Panel has not yet really become active.

Panel 2: ESA hosted the fall workshop of P2 at ESRIN and continued to support all Panel activities. For reasons of limited resources, the number of ESA delegates has to be restricted to two and contractor support could not yet be reinstalled. ESA continued to support Panel Management activities and was particularly active in the Data Administration WP and in the review of the Data Entity Dictionary Specification Language. ESA also presented

phase 3 of the Control Authority Office System and the EOFS-PAE project. Both S/W packages can be made available for use by other CCSDS member agencies.

Panel 3: ESA delegates participated in all six Panel 3 WG meetings held in between the regular spring and fall meeting and worked actively in the drafting and review of panel 3 (SLE) products, currently in the pipeline. Up to six ESA delegates were involved in these activities, and further support (for Forward Space Packet White Book) was provided under contract.

3. CCSDS Related Study Activities

A total of ten different study contracts in support of ongoing or preparation of planned future CCSDS activities are currently placed or in the process of being placed. Six of these study contracts are related to P3 work or to preparation of the planned implementation of SLE services in support of the INTEGRAL and ROSETTA mission.

4. Implementation of CCSDS Recommendations

For a variety of reasons the deployment of Packet Telemetry and Packet Telecommand equipment at ESA stations had again to be delayed and will now take place at the ESA LEOP stations (Kourou, Villafranca, Perth) in the course of 1998 and at the Redu station in the first half of 1999.

The negotiation between ESA and JPL for implementation of direct station interoperability by means of selected SLE Return and Forward Services in accordance with draft panel 3 recommendations for support of the INTEGRAL and ROSETTA mission are proceeding. The final go-ahead is depending on the timely issue of six red panel 3 books by spring 1998 and the solution of severe funding problems within ESA.

5. Available CCSDS Manpower Resources

All ESA staff involved in CCSDS perform this work on a part-time basis. A total of 14 - 16 permanent (ESA) staff are active members of CCSDS panels and working groups. (This figure includes the Panel 1/TSG chairman but excludes the ESA principal delegate). The current total resource level is about 30 mm per annum.

Some additional effort is provided by ESA contract staff, but this resource is rather variable and has generally declined during the last years. Further indirect support is also provided by means of study contracts, executed by industry. ESA is currently running about 10 such studies with a total value of about 1.6 MECU.

6. Outlook

The ESA reorganisation is proceeding and is almost completed. However, there are still a variety of open questions in the area of Standardisation. Future Standardisation Resources, both in terms of internal manpower and contract funding, are expected to be further squeezed. It is therefore uncertain how long the current CCSDS activity level can be maintained by ESA.

ATTACHMENT I

INPE REPORT

INPE REPORT TO CCSDS MANAGEMENT COUNCIL

CCSDS MC Meeting
British National Space Centre - BNSC
Rutherford Appleton Laboratory - RAL
Chilton, Oxford, U.K.
November 13-14, 1997

The National Institute of Space Research (INPE) continues in its effort to develop space mission programs, among others, dedicated to the launch and use of satellites. The series of data collection LEO satellites (SCD-1, 2A, etc.), built in Brazil, is part of this effort. One of these satellites is expected to be launched in April/May 1998. The first of China-Brazil Remote Sensing satellite series is planned to be launched in the second half of 1998. Work is proceeding between INPE and CNES in the development of small satellite platform for scientific and technological experiments. Another, strictly scientific application satellite (SACI) development applied to Space Sciences, involving the Brazilian scientific research community, is under way.

In a new scenario, a basic agreement was celebrated between INPE, AEB (the Brazilian Space Agency) and NASA, last September, concerning the participation of Brazil in the International Space Station (ISS) effort. INPE is deeply committed in the execution of this long term program, which will possibly involve many segments of the Brazilian scientific and technological community. In this context, related to the CCSDS and SC-13/ISO domain, a potential application of the SCPS and superMOCA protocols concept and, possibly, of the CCSDS standard services recommendations, is already being considered for use in a series of scientific experiments related to macromolecular crystallography. These experiments are being executed under the initiative of the University of São Paulo, at São Carlos, in São Paulo state, in cooperation with the University of Alabama, in Birmingham, Alabama, USA.

As part of the continuing CCSDS effort to foster the application of its Recommendations among its Member Agencies, to say the least, INPE takes this opportunity to propose to the Management Council to CCSDS that a document, oriented basically to the management level community of space mission or related programs may be published and maintained for the main purpose of serving as a ‘Practical Guide for Application of CCSDS Recommendations’. It would be desirable that the approach to be used in compiling the proposed document could not only support but also promote a decision process at -management-, decision making level. The depth of the contents of this a document would depend on the importance to be given to each pertinent subject, and it would cover -all- the CCSDS existing or under development Recommendations. As a result, it would be expected that this document may lead to the adoption of one or more of the CCSDS Recommendations, in the context of a specific space mission program, project or part of them, by its pertinent management. This ‘Practical Guide’ should follow a marketing oriented concept and would have to be concise and objective while giving, to a possible extent, an integrated and practical overview of the CCSDS Recommendations to the reader. It is suggested that, as a starting point, in a first version, such a ‘Practical Guide’ can already be derived, in a competent fashion, with a judicious ‘cut-and-paste’ method from the already existing CCSDS documents (BBs, GBs, etc.) with a purposedly short, new wording, in between the compiled material, to the best extent, relying on ‘self-explanatory’, properly legended, existing schemes, possibly including the CCSDS CD-ROM on Recommendations and Documents, as an appended media, pointing to possible, extended consulting, by the user.

EDUARDO W. BERGAMINI
13 November, 1997

ATTACHMENT J

NASA REPORT

NASA Agency Report to the CCSDS Management Council

CCSDS Management Council Meeting
Rutherford Appleton Laboratory, Oxford, UK

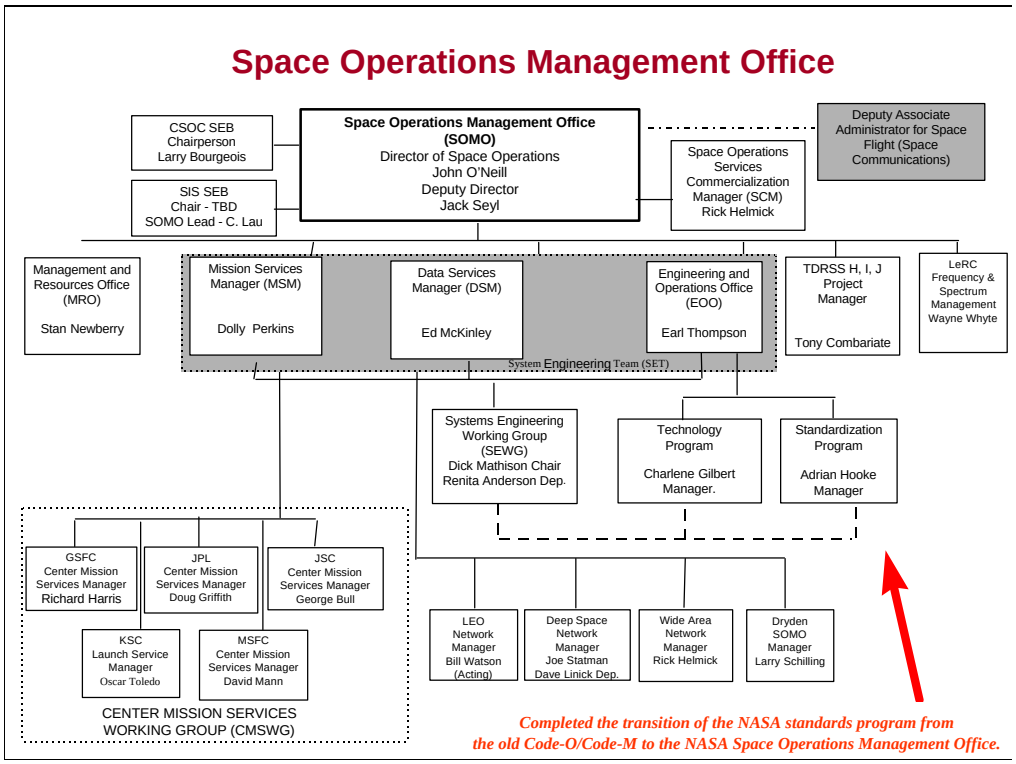
13 November 1997

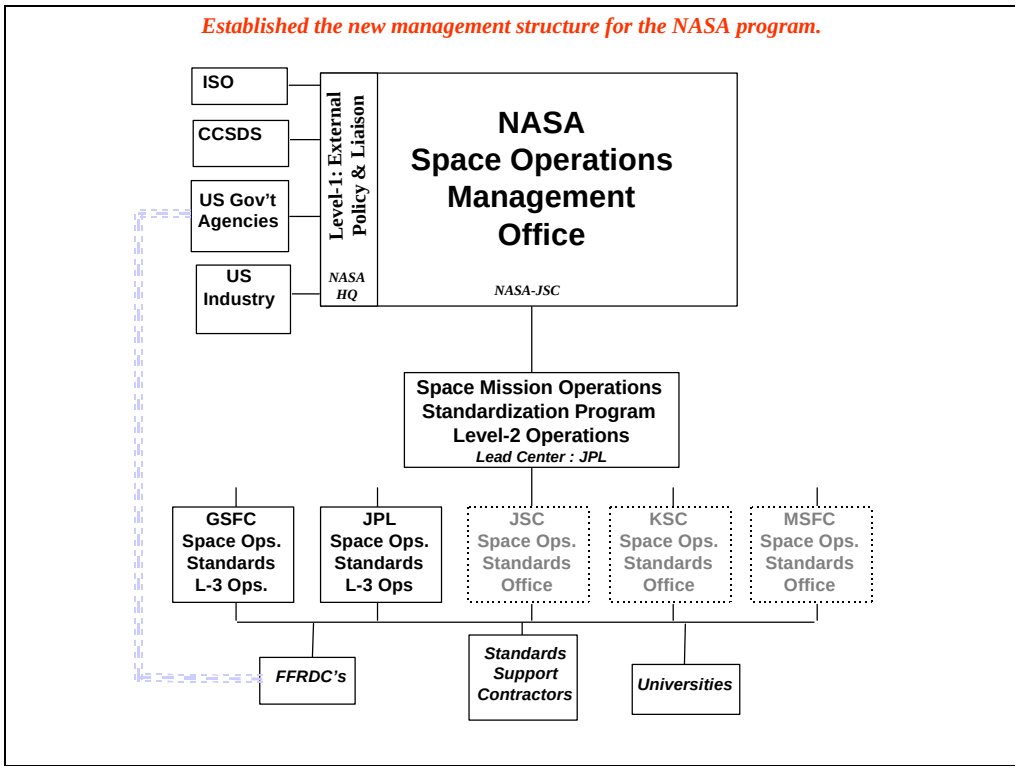
Adrian J. Hooke
Manager, NASA Space Mission Operations Standardization Program
+1.818.354.3063
adrian.hooke@jpl.nasa.gov

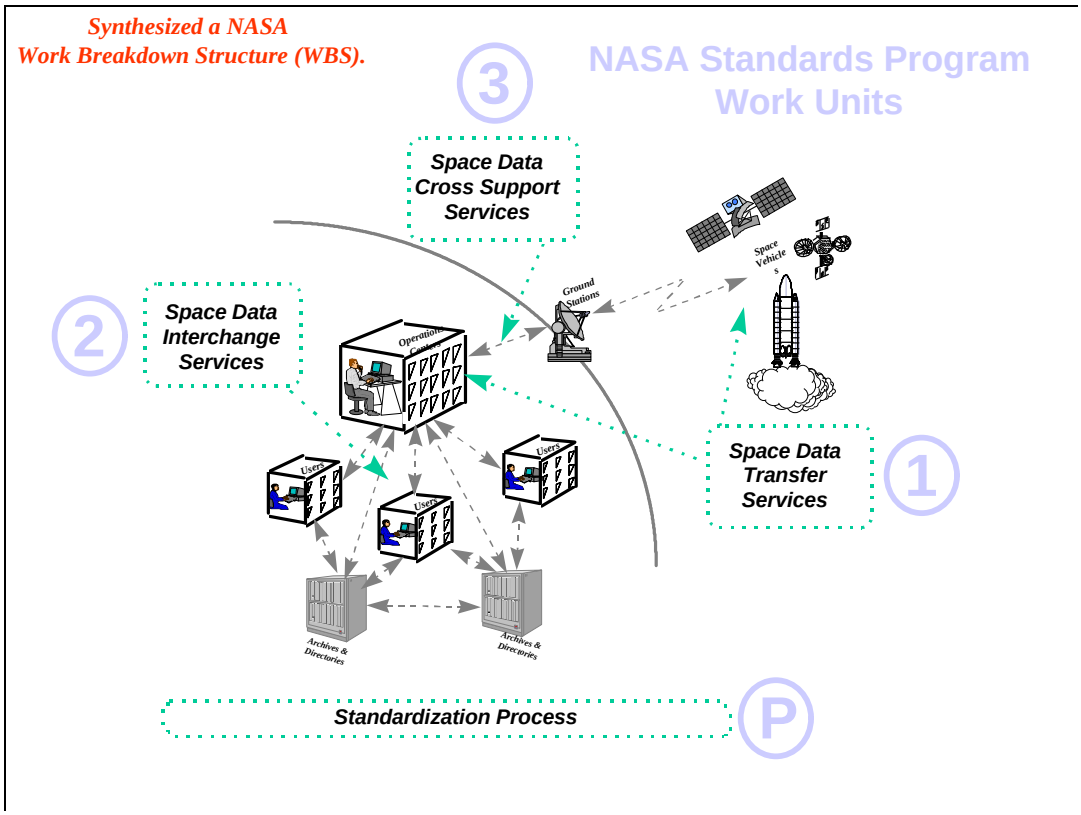
NASA Highlights:

May- November 1997

- Completed the transition of the NASA standards program from the old Code-O/Code-M to the NASA Space Operations Management Office.
-
- Established the new management structure for the NASA program.
- Synthesized a NASA Work Breakdown Structure (WBS).
- Developed a program of work around the new WBS.
- Secured funding for the US Fiscal Year 1998:
  - Direct budget is approximately $4.2M
  - ~ 18% increase relative to FY97
-
- NASA is increasing its commitment to Panel 3 by ~ 300%


Space Operations Management Office
CSOC SEB Chairperson Larry Bourgeois
SIS SEB Chair - TBD SOMO Lead - C. Lau
Space Operations Management Office (SOMO)
Director of Space Operations
John O'Neill
Deputy Director
Jack Seyl
Space Operations Services Commercialization Manager (SCM) Rick Helmick
Deputy Associate Administrator for Space Flight (Space Communications)
Management and Resources Office (MRO)
Stan Newberry
Mission Services Manager (MSM)
Dolly Perkins
Data Services Manager (DSM)
Ed McKinley
Engineering and Operations Office (EOO)
Earl Thompson
System Engineering Team (SET)
TDRSS H, I, J Project Manager
Tony Combariate
LeRC Frequency & Spectrum Management Wayne Whyte
Systems Engineering Working Group (SEWG)
Dick Mathison Chair
Renita Anderson Dep.
Technology Program
Charlene Gilbert Manager.
Standardization Program
Adrian Hooke Manager
GSFC Center Mission Services Manager Richard Harris
JPL Center Mission Services Manager Doug Griffith
JSC Center Mission Services Manager George Bull
KSC Launch Service Manager Oscar Toledo
MSFC Center Mission Services Manager David Mann
CENTER MISSION SERVICES WORKING GROUP (CMSWG)
LEO Network Manager Bill Watson (Acting)
Deep Space Network Manager Joe Statman Dave Linick Dep.
Wide Area Network Manager Rick Helmick
Dryden SOMO Manager Larry Schilling
Completed the transition of the NASA standards program from the old Code-O/Code-M to the NASA Space Operations Management Office.


Established the new management structure for the NASA program.
ISO
CCSDS
US Gov't Agencies
US Industry
Level-1: External Policy & Liaison
NASA HQ
NASA Space Operations Management Office
NASA-JSC
Space Mission Operations Standardization Program
Level-2 Operations
Lead Center : JPL
GSFC Space Ops. Standards L-3 Ops.
JPL Space Ops. Standards L-3 Ops
JSC Space Ops. Standards Office
KSC Space Ops. Standards Office
MSFC Space Ops. Standards Office
FFRDC's
Standards Support Contractors
Universities


Synthesized a NASA
Work Breakdown Structure (WBS).
3
NASA Standards Program
Work Units
Space Data
Cross Support
Services
Space Data
Interchange
Services
2
Space Data
Transfer
Services
1
Standardization Process
P
Ground
Stations
Space
Vehicle
s
Users
Archives &
Directories

TASK ID	*TASK NAME*	*Point of Contact*	*Center*
	P. PROCESS TASKS		
P1.0	NASA LEVEL-1 OPERATIONS		
P1.1	ISO OPERATIONS	Dave Townley	HQ
P1.1.1	ISO Secretariat Operations	Linda Kezer	HQ
P1.1.2	USSCAG13 Operations	Adrian Hooke	JPL
P1.1.3	ANSI Membership Fee	Dave Townley	HQ
P1.2	CCSDS OPERATIONS	Dave Townley	HQ
P1.2.1	CCSDS Secretariat Operations	Linda Kezer	HQ
P1.2.1.1	CCSDS Document Editing	Bill Poland	GSFC
P1.2.1.2	CCSDS Web Page	Don Sawyer	GSFC
P1.2.1.3	CCSDS Web Page Mirror	Bill Poland	GSFC
P1.2.2	US Principal Delegate Operations	Dave Townley	HQ
P1.2.2.1	NTAG Support Staff	Don Wilson	GSFC
P1.2.2.2	CCSDS US Meeting Hosting	Dave Townley	HQ
P1.3	NASA/DOD/NOAA PROGRAM OPERATIONS	Dave Townley	HQ
P1.3.1	NASA/DOD/NOAA Program Support Staff	Don Wilson	GSFC
P1.4	US INDUSTRY PROGRAM OPERATIONS	Linda Kezer	HQ
P1.4.1	Industry Program Support Staff	Don Wilson	GSFC
P1.4.2	Industry Meeting Support - GSFC	Don Wilson	GSFC
P1.4.3	Industry Meeting Support - JPL	Merv MacMedan	JPL
P2.0	NASA LEVEL-2 OPERATIONS		
P2.0.1	Level-2 Program Management	Adrian Hooke	JPL
P2.0.2	NL2O Office Support	Adrian Hooke	JPL
P2.0.3	NASA Document Review Automation	Bill Poland	GSFC
P3.1	GSFC LEVEL-3 OPERATIONS		
P3.1.1	CNMOS Contract	Don Wilson	GSFC
P3.1.2	GL3O Office Support	Bill Poland	GSFC
P3.2	JPL LEVEL-3 OPERATIONS		
P3.2.1	Level-3 Office Management	Merv MacMedan	JPL
P3.2.1	Institutional Document Review Support	Merv MacMedan	JPL
P3.2.2	JPL3O Office Support	Merv MacMedan	JPL

TASK ID	*TASK NAME*	*Point of Contact*	*Center*
	1. SPACE DATA TRANSFER TASKS		
1.1	DATA COMPRESSION		
1.1.1	Data Compression - Lossless	Merv MacMedan	JPL
1.1.2	Data Compression - Lossy	Warner Miller	GSFC
1.2	SPACE COMMUNICATIONS PROTOCOL STANDARDS		
1.2.1	Project Management	Adrian Hooke	JPL
1.2.2	SCPS File Protocol (SAIC contract)	Adrian Hooke	JPL
1.2.3	SCPS Transport Protocol (MITRE contract)	Dave Townley	HQ
1.2.4	SCPS Green Book (CTA contract)	Jim Pritchard	GSFC
1.3	RADIO FREQUENCY AND MODULATION		
1.3.1	Standards Management Support:	Warren Martin	JPL
1.3.1.1	- CCSDS RF&Modulation Standardization		
1.3.1.2	- CCSDS Link Control		
1.3.1.3	- RF&Mod, Earth Stations Green Book"		
1.3.2	Bandwidth Efficient Modulation: Ph.-3/4 definition	Warren Martin	
1.4	SUPERMOCA - Space Project Mission Ops. Ctrl. Arch.		
1.4.1	Standards definition	Mike Jones	JPL
1.4.2	Architecture	Mike Jones	JPL
1.4.3	Technology development	Mike Jones	JPL
1.5	SPACE LINK PROTOCOL		
1.5.1	Link Protocol Maintenance	Merv MacMedan	JPL
1.5.2	Link Protocol Consolidation (TLM, TC, AOS)"	Merv MacMedan	JPL
1.5.3	Link Protocol - Next Generation	Merv MacMedan	JPL
1.6	CHANNEL CODING		
1.6.1	Turbo Codes - JPL Support	Merv MacMedan	JPL
1.6.2	Turbo Codes - GSFC support	Warner Miller	GSFC
1.6.3	High Rate Channel Coding	Warner Miller	GSFC
1.7	EFFICIENT MODULATION: Phase-3/4 Technology Devel.	Tsun-Yee Yan	JPL
1.8	RADIO METRIC AND ORBIT DATA - NEXT GENERATION	Kurt Liewer	JPL
1.9	FLIGHT TECHNOLOGY TESTBED	Adrian Hooke	JPL
1.10	FLIGHT SYSTEM STANDARDIZATION STUDY	Merv MacMedan	JPL
1.11	FIRMWARE DEVELOPMENT		
1.11.1	Decompressor Chipset	Warner Miller	GSFC
1.11.2	Reed Solomon ASIC	Warner Miller	GSFC
1.11.3	Packetizer ASIC	Warner Miller	GSFC
1.11.4	COP1 ASIC	Warner Miller	GSFC
1.11.5	SCPS Offboard ASIC	Warner Miller	GSFC
1.11.6	SuperMOCA Smart Interface ASIC	Warner Miller	GSFC
1.12	REFERENCE SOFTWARE DISTRIBUTION & MAINTENANCE		
1.12.1	Data Compression Reference Software	Merv MacMedan	JPL
1.12.2	Link Design Control Table Software	Warren Martin	JPL
1.12.3	SCPS Reference Software	Adrian Hooke	JPL
1.13	CONSULTATION & STANDARDS PRODUCT SUPPORT		
1.13.1	Implementers Workshops	Merv MacMedan	JPL

TASK ID	*TASK NAME*	*Point of Contact*	*Center*
	2. SPACE DATA INTERCHANGE TASKS		
2.1	PANEL-2 OVERVIEW	Don Sawyer	GSFC
2.2	REQUIREMENTS DEVELOPMENT		
2.2.1	Methodology, Development of Recommendations	Don Sawyer	GSFC
2.2.2	High Level Requirements and Models	Don Sawyer	GSFC
2.3	STRUCTURES		
2.3.1	Referencing Environment	Don Sawyer	GSFC
2.3.2	Structures Review and Update	Don Sawyer	GSFC
2.3.3	Extended Structures Concepts	Don Sawyer	GSFC
2.4	EAST DATA DESCRIPTION LANGUAGE		
2.4.1	EAST Specification	Don Sawyer	GSFC
2.4.2	EAST Extensions for Pointers	Don Sawyer	GSFC
2.5	PARAMETER-VALUE LANGUAGE (PVL)		
2.5.1	PVL Review and Update	Don Sawyer	GSFC
2.6	DATA ENTITY DICTIONARY		
2.6.1	Data Dictionary DEDSL	Don Sawyer	GSFC
2.6.2	Data Dictionary (DEDSL) OO Concepts	Don Sawyer	GSFC
2.7	CONTROL AUTHORITY		
2.7.1	Control Authority Workshops	Don Sawyer	GSFC
2.7.2	Control Authority Procedures Review and Update	Don Sawyer	GSFC
2.7.3	Control Authority Automated Services	Don Sawyer	GSFC
2.7.4	Control Authority Operations Guides	Don Sawyer	GSFC
2.8	ARCHIVING STANDARDS		
2.8.1	Archiving Reference Model	Don Sawyer	GSFC
2.8.2	Archiving Submission Standard	Don Sawyer	GSFC
2.8.3	Archiving Access and Dissemination Standard	Don Sawyer	GSFC
2.8.4	Archiving Data Migration Guide	Don Sawyer	GSFC
2.9	CATALOG INTEROPERABILITY PROTOCOL	Don Sawyer	GSFC
2.10	REFERENCE SOFTWARE DISTRIBUTION & MAINTENANCE		
2.10.1	Joint Software Development	Don Sawyer	GSFC
2.10.2	Implementers Workshops	Don Sawyer	GSFC
2.11	CONSULTATION & STANDARDS PRODUCT SUPPORT		
2.11.1	Standards Support Services	Don Sawyer	GSFC
2.11.2	NASA Primary Control Authority Services	Don Sawyer	GSFC

TASK ID	*TASK NAME*	*Point of Contact*	*Center*
	3. SPACE DATA CROSS SUPPORT TASKS		
3.1	CROSS SUPPORT ARCHITECTURE		
3.1.1	Cross Support Architecture - GSFC Support	Pat Lightfoot	GSFC
3.1.2	Cross Support Architecture - JPL Support	Merv MacMedan	JPL
3.2	SPACE LINK EXTENSION SERVICES		
3.2.1	Space Link Extension Services - GSFC Support	Pat Lightfoot	GSFC
3.2.2	Space Link Extension Services - JPL Support	Merv MacMedan	JPL
3.3	CROSS SUPPORT GROUND DOMAIN		
3.3.1	Cross Support Ground Domain - GSFC Support	Pat Lightfoot	GSFC
3.3.2	Cross Support Ground Domain - JPL Support	Merv MacMedan	JPL
3.4	SPACE NETWORK ADDRESSING		
3.4.1	Space Network Addressing - GSFC Support	Pat Lightfoot	GSFC
3.4.2	Space Network Addressing - JPL Support	Merv MacMedan	JPL
3.5	REFERENCE SOFTWARE DISTRIBUTION & MAINTENANCE		
3.5.1	SLE Reference Software	Pat Lightfoot	GSFC
3.6	CONSULTATION & STANDARDS PRODUCT SUPPORT		
3.6.1	Implementers Workshops	Pat Lightfoot	GSFC

ATTACHMENT K

NASDA REPORT

NASDA STATUS REPORT
CCSDS MC (OXFORD ENGLAND, Nov. 13-14, 1997)

NASDA
NATIONAL SPACE DEVELOPMENT AGENCY OF JAPAN

NASDA CCSDS Activity Report after the last MC meeting.

1. Implementation

1) ONBOARD

- **ETS - VII (Rendezvous/ Docking, Launch in Nov. 19th, 1997)**
  Uplink - Telecommand / Downlink - AOS

- **TRMM (Precipitation Radar, Launch in Nov. 19th 1997)**
  Uplink - Telecommand / Downlink - AOS

- **ADEOS-II (Earth Observation Satellite, Launch in Aug. 1999)**
  Downlink - AOS

- **JEM (Space Station, Launch in 2001)**
  Uplink - AOS / Downlink - AOS

- **ETS - VIII (Engineering Test Satellite, Launch in Aug. 2002)**
  Under studying of Telecommand for Uplink and AOS for Downlink

- **ALOS (Land Observation Satellite, Launch in Feb. 2003)**
  Under studying of Telecommand for Uplink and AOS for Downlink

2) GROUND System

- **The development of EPAP (Experimental Packet Processor) for ETS-VII / TRMM has already finished and we are ready to launch.**
  (Telecommand and AOS (return))

- **The development of CCSDS packet data handling equipment for JEM has already started.**
  (Telecommand and AOS (forward/return))

- **We continue to study about rearrangement for future ground stations including adoption of CCSDS recommendation.**

NASDA STATUS REPORT
CCSDS MC (OXFORD ENGLAND, Nov. 13-14, 1997)

NASDA
NATIONAL SPACE DEVELOPMENT AGENCY OF JAPAN

2. PANEL ACTIVITIES

Panel 1.
- **Review of SCPS red book and protocol-X document.**
- **NASDA will attend panel 1F meeting in December.**

Panel 2.
- **Monitored the panel activities.**

Panel 3.
- **Review of RAF service, TC-CLTU, SLE - management white book.**
- **NASDA attended panel 3 meeting in November.**

3. NASDA Standards for CCSDS

- **Study of revising NASDA TTC Standard including of CCSDS RF&Mod..**
- **Study about establishment of AOS-Audio / video / still - image standard.**
- **Establishment of the Telecommand and AOS standard.**

4. Organization and Manpower

NASDA CCSDS members as follows.

Delegate	**T. Mito**
TSG/MC/ISO	**M. Kashimoto** **S. Ogawa**
Panel 1	**S. Ogawa (P1a)** **Y. Nonaka (P1e, P1f)** **M. Sawabe (P1j)**
Panel 2	**Y. Inoue**
Panel 3	**K. Shinohara** **D. Asoh**
Secretariat	**Y. Nonaka**

Total manpower are estimated about 2 persons / year.

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ATTACHMENT L

RSA REPORT

The RSA report for CCSDS Management Council
and ISO/TC20/SC13
November 1997

Since the last May meeting RSA/TsNIIMash have continued work on translation of the CCSDS Recommendations and projects and distribution them for the domestic experts. RSA/TsNIIMash have considered and analyzed reports and proposals of all CCSDS agencies.

As the problem of financing of the CCSDS activity in is one of main for all CCSDS members, including RSA, RSA is compelled to define the main directions of its activity. First of all PKA has concentrated the attention on studying of the CCSDS Recommendations and standard technologies and assumes in 1998 to develop the program of implementing of a number of the Recommendations CCSDS and standards ISO/TC20/SC 13 in the national standards.

Besides RSA will continue work on consideration and acceptance of the documents CCSDS. But as the means for participation in work are enough limited, RSA/TsNIIMash while assumes to carry out only monitoring of the works for all panels.

RSA approves offered the CCSDS certificate for presentation to individuals providing exceptional service to the CCSDS.

At MC May meeting in INPE (Brasilia) the RSA/TsNIIMash delegates promised to provide the proposals to the Ground Stations Green book. RSA has carried out work on preparing the information about the Russian ground tracking station characteristics located near to city Ussuriysk of Primorye Territory and a settlement Medvejy Lakes of Moscow area. As a result of the carried out work RSA has come to a conclusion that now to include the data on the specified stations in the CCSDS Green book prematurely. This decision is caused by a number of organizational and departmental problems connected to belonging of ground stations to, and also incompatibility of the stations characteristics to the international radiofrequency regulations and Recommendations CCSDS. Nowadays according to the Program of modernization of Russian tracking stations the works will be carried out which will ensure compatibility of Russian and American tracking stations. However RSA considers it is possible to provide the mentioned stations parameters and characteristics to CCSDS, which can be included in the Green book under the following reconsideration (see Attachment).

TsNIIMash continues active work with the standards ISO/TC2O/SCl3 and plans to include some of them into the program on implementing of the international requirements in the domestic standards.

Attachment

Parameters RSA ground tracking stations

According to the plans of participation RSA in the CCSDS activities the decision was accepted to prepare the data on the characteristics of the Russian ground tracking stations of deep space located near Ussuriisk of Primorye Territory, near Bear's Lakes of Moscow region.

Station in Ussuriisk (coordinate: +43,8 deg. latitude, 132,0 deg.longitude) is equipped with aerials by a diameter 70m and 32 m.

Working ranges of radiofrequencies:

- **L-range - 0,7 GHz on transfer, 0,9 GHz on reception**
- **C- range - 5,0 GHz on transfer, 5,9 GHz on reception.**

Modes of an information exchange with space object:

- **Transfer telecommands on space objects,**
- **Reception from space objects telemetery and scientific information, measurement of range and radial speed (Doppler's shift of frequency).**

Station near Bear's Lakes (coordinate: 55,8 deg.latitude, 38,5 deg.longitude) is equipped with the reception aerial by a diameter 64 m and the aerial by a diameter of 32 m is under construction.

The station works on reception of telemetery and scientific information in ranges of radiofrequencies: C-range - 5,9 Ghz, X-range -8,4 GHz.

The aerial with a diameter 32 m will be equipped by the transmitter in C-range - 5,0 GHz. After input in operation this aerial the station will work in all regimes on management space objects of deep space.

Nowadays practically under all basic characteristics a Russian network of tracking stations for space objects of deep space do not correspond to the requirements of the international radiofrequency regulations and the CCSDS recommendations.

Maintenance of compatibility of Russian and American stations of tracking needs their conformity on the basic technical parameters:

- **Working ranges of radiofrequencies;**
- **Kinds of modulation in radiochannels;**
- **Structure of signals in telecommand and telemetery links;**
- **Kinds of used noiseproof codes;**
- **Structure of the range measurement signals;**
- **Structure of the data exchange signals between the elements of the network.**

Nowadays the work on modernization of the Russian tracking stations will be carried out. This work include:

•input of new working ranges of radiofrequencies: S-range - 2,1 GHz for transfer; 2,2 GHz for reception; Õ-range - 7,2 GHz for transfer; 8,4 GHz for reception;

•development of the equipment for formation, decoding and registration of the signals in the structure recommended by CCSDS;

•development of the equipment for trajectory measurements compatible with american equipment

•development (or purchase abroad) of the equipment for registration of the radiointerferometry measurements data.

After realization of the Russian stations modernization program the compatibility will be supplied for Russian and American (DSN) tracking networks for the deep space objects.

ATTACHMENT M

DRAFT TSG AGENDA – MAY 1998

DRAFT
AGENDA FOR NEXT TSG MEETING
11-12 MAY 1998

ADDITIONS TO STANDARD AGENDA ITEMS:

- Focus: Strategic CCSDS Plan
  Future requirement / environment / missions
  (by Agencies, Panels)
  ⇒ ROAD MAP TO THE FUTURE

- Addressing Space Missions:
  Needs
  New Proposals
  Naming Conventions

- CCSDS Overall Work Plan (from Panels)
  (Research, Development, Deployment)

- Space Link Reference Model

- OAIS, CEOS-CIP Standard

- Protocol-X (new file transfer)

- Conformance Proforma / Options Matrix

- Questionnaires: Standards, Implementations, Missions
  (actual, in work, planned)

- INTEGRAL-related Implementation, Status

- P1J Work Plan (more detailed)

- Information to Implementers / Workshops

- Setting up of CCSDS Presentations for Symposia

ATTACHMENT N

PROPOSED CHANGES TO PROCEDURES MANUAL

At time of publication, the active Member and Observer Agencies of the CCSDS were

Member Agencies

- *Agenzia Spaziale Italiana (ASI)/Italy.* 11/97
- British National Space Centre (BNSC)/United Kingdom.
- Canadian Space Agency (CSA)/Canada.
- Centre National d'Etudes Spatiales (CNES)/France.
- Deutsche Forschungsanstalt für Luft- und Raumfahrt e.V. (DLR)/Germany.
- European Space Agency (ESA)/Europe.
- Instituto Nacional de Pesquisas Espaciais (INPE)/Brazil.
- National Aeronautics and Space Administration (NASA)/USA.
- National Space Development Agency of Japan (NASDA)/Japan.
- Russian Space Agency (RSA)/Russian Federation.

Observer Agencies

- ~~Australian Space Office (ASO)/Australia.~~ 11/97
- Austrian Space Agency (ASA)/Austria.
- Central Research Institute of Machine Building (TsNIIMash)/Russian Federation.
- Centro Tecnico Aeroespacial (CTA)/Brazil.
- Chinese Academy of Space Technology (CAST)/China.
- *Commonwealth Scientific and Industrial Research Organization (CSIRO)/Australia.* 11/97
- Communications Research Laboratory (CRL)/Japan.
- Danish Space Research Institute (DSRI)/Denmark.
- European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)/Europe.
- European Telecommunications Satellite Organization (EUTELSAT)/Europe.
- Federal Service of Scientific, Technical & Cultural Affairs (FSST&CA)/Belgium.
- Hellenic National Space Committee (HNSC)/Greece.
- Indian Space Research Organization (ISRO)/India.
- Industry Canada/Communications Research Centre (CRC)/Canada.
- Institute of Space and Astronautical Science (ISAS)/Japan.
- Institute of Space Research (IKI)/Russian Federation.
- KFKI Research Institute for Particle & Nuclear Physics (KFKI)/Hungary.
- MIKOMTEK: CSIR (CSIR)/Republic of South Africa.
- Korea Aerospace Research Institute (KARI)/Korea.
- Ministry of Communications (MOC)/Israel.
- National Oceanic & Atmospheric Administration (NOAA)/USA.
- National Space Program Office (NSPO)/Taipei.
- Swedish Space Corporation (SSC)/Sweden.
- United States Geological Survey (USGS)/USA.

Agency comments about~~,~~ *(*or approval of*)*~~,~~ the RB ~~is~~*are* sought. Several iterations of an RB may occur in response to iterations in the Agency review process. 11/97

c) **CCSDS Blue Book**

A Blue Book (BB) is a Recommendation. It reflects resolution of official comments from Member Agencies during formal reviews, and, as such, represents the ~~concurrence~~*consensus* of the appropriate implementing organizations within each Member Agency. Member Agency approval of a Blue Book implies an intent to reflect its provisions in future data systems standards developed through internal mechanisms. 11/97

d) **CCSDS Green Book**

A Green Book (GB) is a Technical Report; it is not a specification. Green Books are developed to: (a) assist Agencies during their RB review to understand the requirements and rationale for the specific contents of the RB; (b) present engineering analyses and results for space data systems design options; and (c) provide general technical guidance regarding the use of Member Agency facilities. Green Books provide convenient references for space mission designers and others interested in assessing the relevant item for their particular application.

e) **CCSDS Yellow Book**

A Yellow Book (YB) is a non-technical administrative document or report. (This Procedures Manual is a CCSDS Yellow Book.) YBs are not ordinarily distributed outside the CCSDS.

f) **CCSDS Pink Sheets/Pink Book**

In order to allow for future flexibility and respond to technological innovations, provisions for modifications to the Blue Book must be incorporated. All Blue Books are, therefore, subject to the document change control and management procedures which are defined in sections 5 and 6. Pink Sheets represent a set of proposed change pages to part(s) of an existing CCSDS Blue Book. A Pink Book represents a complete revision to an existing CCSDS Blue Book.

1.6.3 NOMENCLATURE

The following conventions apply throughout this Manual:

a) the words ‘shall’ and ‘must’ imply a binding and verifiable specification;

b) the word ‘should’ implies an optional, but desirable, specification;

c) the word ‘may’ implies an optional specification;

d) the words ‘is’, ‘are’, and ‘will’ imply statements of fact.

3.1.1.2 Duties and Responsibilities

The MC shall

a) provide leadership to and long-term objectives for the CCSDS program;

b) establish the number and types of technical panels by which the CCSDS program is conducted;

c) appoint technical panel chairpersons, the CCSDS Secretariat, and the chairperson of the Technical Steering Committee;

d) periodically review the CCSDS organizational structure to determine the need for any change, including the establishment and dissolution of technical panels;

e) periodically review the CCSDS membership to determine the advisability of any assignment changes of officers and/or members;

f) review, evaluate, and approve technical panels' programs of work;

g) review, evaluate, and approve for release and external distribution all CCSDS Recommendations and Reports developed by the technical panels, and encourage participating Agencies to develop and implement corresponding Agency-internal standards;

h) determine the need for external liaisons or informational studies, approve new work proposals relative to conducting these, and assign such work to Ad Hoc Advisory Groups or technical panels to develop;

i) issue invitations, via the Secretariat, to new agencies and other organizations to participate in CCSDS in an appropriate capacity.

j) control major elements on the CCSDS Home Page, and approve changes thereto.

k) members, in their roles as Heads of Delegation to CCSDS, shall:

1) understand their individual agency's constraints and legal issues concerning the making of Agency-developed products (hardware and software) available to other Agencies;

2) seek exemption from said constraints and legal issues for all hardware and software as may be produced internally or under contract by said Agency for the development of CCSDS-related components, so as to allow for free and unrestricted use of these products by the participating CCSDS Agencies.

11/97

4.1.2.2 Plenary Conference Participation

Plenary meetings are open to all interested parties. Members of each of the four CCSDS categories are automatically invited to a Plenary Conference. Tutorials on CCSDS activities will be given to individuals involved in space-flight projects and ground support. Assistance in utilization of CCSDS products will be offered. On occasion, members of space-related industries may sponsor exhibits of their CCSDS-compatible products.

4.2 WORKING PROCEDURES FOR MC MEETINGS

Two months before each MC meeting, the Secretariat shall distribute a preliminary agenda and a meeting announcement. The preliminary agenda shall list the new issues to be considered during the discussion of each agenda item together with a list of open action items from previous meetings. Requests for Agency inputs to this draft agenda shall be made at this time. Agency Heads of Delegation are required to indicate the status of their individual action items at this time.

One month before an MC meeting, the Secretariat shall distribute a revised agenda which includes Agency inputs relative to both agenda suggestions and action item status. It is the responsibility of those Agencies submitting papers for discussion at an upcoming meeting to distribute copies of such papers one month prior to that meeting to allow sufficient time for Agencies' review. *Agency submissions shall be provided in both electronic and hard-copy forms.* 11/97

4.3 WORKING PROCEDURES FOR TSG MEETINGS

The TSG shall function in a manner similar to that of the technical panels but with less formality and less structure. In general, the TSG shall not form standing subgroups, but rather shall rely on Ad Hoc Advisory Groups with specific deliverables and limited, specified lifetimes.

The TSG is expected to meet on a schedule that is compatible with that of the MC in order to provide that body with its current status and activities. Otherwise it may hold meetings on an as-needed basis rather than on a formal, regular, or ongoing basis. The decision to meet shall be in response to the request by one of the panel chairpersons or in response to a specific assignment by the MC.

Prior to a meeting, the TSG shall develop an agenda and recommended attendance list. A register of meeting input documents, meeting minutes, and meeting conclusions and recommendations shall be maintained *and provided to the Secretariat in both electronic and hard-copy forms*. A formal report on each meeting shall be presented to the MC. 11/97

Copies of the TSG meeting minutes shall be distributed by the TSG chairperson to all TSG participants, and to the CCSDS Member and Observer Agencies. The quantities to be distributed

5 DOCUMENT DEVELOPMENT AND CHANGE CONTROL

The principal products of the CCSDS are Recommendations for space data systems standards. A Recommendation is a consensus technical proposal developed within the CCSDS to serve as a basis for corresponding data systems standards within Member Agencies. CCSDS Recommendations, therefore, are not in themselves standards.

5.1 DOCUMENT DEVELOPMENT

This subsection addresses the chronological procedures by which the several CCSDS document types are developed. These procedures are illustrated in figure 5-1.

5.1.1 NEW WORK ITEM

All proposals for new work which have as their objective the development of a CCSDS Recommendation or Report must

- have the technical recommendation of the TSG; and
- the management approval of the MC.

All proposed CCSDS NWIs shall include a specific plan for the development of associated software prior to their approval. Such a plan must identify the Agencies participating in the task and identify the specific benefits of sharing software, such as the quid-pro-quo advantages of cooperative sharing.

11/97

Following MC approval of the NWI, participating Agencies shall seek exemption (as necessary) from their individual Agency's constraints on distribution of the resulting software for its free and unrestricted use by all other participating Agencies.

Each proposed NWI shall be submitted as a Concept Paper (CP) to the TSG and MC. The CP should identify

- the data system area which it is addressing, preferably in the context of the CCSDS High Level Reference Model;
- the perceived advantages to be gained from the establishment of a suitable CCSDS Recommendation;
- a rough estimate of the time and resources required to develop said Recommendation; and
- a reference to any appropriate external standards which exist.

NOTE – The CCSDS recognizes that relevant work is being done by other Standards Development Organizations (SDOs) and, therefore, in the interests of economies,

6.2.2.2 White books, Red books, Pink Books, and Pink Sheets

The Secretariat, through the services of a Document Manager, shall retain copies of all documents currently under development in an on-line data base accessible via FTP or HTTP. In these instances, however, access control shall be enforced to assure that only permitted reviewers may obtain access to the document for their review and comments. *Agencies shall establish their own internal procedures for conducting reviews using the materials provided on line.* 11/97

NOTE – Paper copies of the Recommendations can be reproduced from the on-line version of the document.

6.2.2.1 Blue Book Corrigenda

When authorized by the MC, the Secretariat, through the services of a Document Manager, shall assure the following:

- specified changes are made in the electronic files for the changed document;
- changes are marked with change bars and a marginal notation indicating the corrigendum number, e.g., 'TC 1';
- the footer for the changed page reflects the corrigendum number and the issue date of the corrigendum;
- a notation is made on the cover of the on-line document (without otherwise altering the cover) indicating the number of the latest corrigendum;
- at the end of the document citation on the Web, lines are added for each corrigendum with hyperlinks to an electronic version of the corrigendum as distributed in hardcopy.

6.3 CCSDS DOCUMENT MANAGER FUNCTIONS

The CCSDS Document Manager functions are assigned to the Secretariat, the heads of delegation, and the designated Agency points of contact.

6.3.1 The Secretariat shall

- *produce and distribute CD-ROMs when new documents are approved and published (nominally on a semi-annual basis);* 11/97
- receive requests for *CD-ROMs and* documents and forward them to the appropriate designated point of contact for action; 11/97
- maintain a current list of all documents which CCSDS has released;

ANNEX A

SECRETARIAT OF THE CCSDS

(August 1996)

Secretariat of the CCSDS
Attn.: ~~John Rush~~*David L. Townley* 11/97
Program Integration Division, Code MG
National Aeronautics and Space Administration
Washington, DC 20546 USA.

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ANNEX B

CCSDS CHARTER

(~~August 1996~~*November 1997*) 11/97

PREAMBLE

A significant trend exists within national and international space Agencies towards using standard techniques for handling space data. By cooperatively developing these techniques, future data system interoperability may be enhanced.

Recognizing the benefits and efficiencies to be gained by each Agency from this enhancement in interoperability, and international Consultative Committee for Space Data Systems (CCSDS) is established. It will function as a forum for international cooperation in the development of data handling techniques *with relevant hardware and software as appropriate* supporting space research, including space science and applications, for exclusively peaceful purposes. 11/97

DEFINITIONS

Recommendations are technical documents providing detailed, but not binding, technical guidance to member Agencies regarding the development of their own specific standards for space data handling systems.

Standards are technical specifications within each Agency to support the engineering design, functions, parameters, and interfaces of their respective data system elements and have the nature of commitments. Therefore, the responsibility for their development and implementation resides within each individual Agency.

OBJECTIVES

The objectives of the CCSDS are as follows:

1) ~~T~~to provide a forum whereby interested Agencies may exchange technical information relative to the internal development or application of space mission data systems standards;

2) ~~T~~to identify those common elements of space data systems which, if implemented in a standardized way, will result in significant enhancements in the operation of future cooperative space missions, or in the sharing of mission products;

3) ~~T~~to develop through consensus appropriate technical Recommendations which guide the development of compatible Agency standards so that interoperability is maximized;

4) to facilitate and promote the free and unrestricted use of software and hardware developed under the CCSDS program by all participating Agencies; 11/97

4*5)* ~~T~~*t*o promote the application of the Recommendations within the space mission community; and 11/97

5*6)* ~~T~~*t*o maintain cognizance of other international standardization activities which may have direct impact on the design or operation of space mission data systems. 11/97

PARTICIPATION

Participants in the CCSDS include "Member Agencies," "Observer Agencies," and "Associates."

Member Agencies

CCSDS Member Agencies are those Agencies who indicate a willingness to fully participate in CCSDS activities and provide the commensurate level of support. They shall notify their approval of the Charter and shall make their best effort to ensure the adherence of their internal Standards to the applicable Recommendations of the CCSDS.

Only Member Agencies participate in the consensus process within the CCSDS.

Observer Agencies

CCSDS Observer Agencies are those Agencies who indicate a desire to participate in CCSDS activities but at a reduced level of effort. Observer Agencies are encouraged but not expected to make their best effort to ensure the adherence of their internal standards to the applicable Recommendations of the CCSDS.

Liaison Organizations

Liaison organizations are those governmental or private activities which have developmental programs in the areas of space-related data and information systems. Liaison status is open to non-commercial, standards-developing organizations operating in areas similar to those of the CCSDS.

Associates

CCSDS Associates are those scientific and industrial organizations desiring a formal tie with the CCSDS through which they can more closely monitor the technical document development process.

Associates may not directly participate in the document development process without the explicit approval of their sponsoring Agency.

ANNEX C

TECHNICAL PANEL CHARTERS

(August ~~1996~~*November 1997*)

11/97

CCSDS PANEL 1 (P1)

~~Telemetry, Tracking, and Command~~*Space Communications* 11/97

CHARTER

(Terms of Reference)

(~~August 1996~~*November 1997*) 11/97

Purpose

To provide a discussion forum on the space link interface for space mission data system interoperability.

To identify the physical-link characteristics, data structures and protocols at the space link interface and develop associated technical Recommendations in order to maximize opportunities for cooperation to achieve space mission data interoperability.

To develop appropriate technical Reports which give background and supporting information related to the technical Recommendations of the panel.

Scope

Panel 1 (P1) shall have primary responsibility within CCSDS for the development of telemetry, tracking, and command data structures and protocols, including the physical link characteristics (RF and Modulation). This activity shall incorporate existing international standards, where appropriate.

Membership

The service of a chairman shall be confirmed by consensus of the CCSDS Management Council. Panel participation shall be open to all CCSDS Agencies. Panel operating procedures, particularly with regard to panel-internal consensus, shall be in accordance with the CCSDS Procedures Manual.

CCSDS TECHNICAL STEERING GROUP

CHARTER

(Terms of Reference)

(~~August 1996~~*November 1997*) 11/97

Purpose

To ~~develop and~~ coordinate the overall technical plan of work for CCSDS. 11/97

Scope

Update the overall requirements for CCSDS activities derived from the needs of future space projects and technology programs.

Adapt the existing overall work plan to these requirements.

Support the establishment and the review of the work plans of the CCSDS panels.

Ensure the harmonization of the panels' activities in terms of detailed activities schedules, technical interfaces, technical terminology, ~~storing~~ *sharing* of resources, and the schedule of meetings. 11/97

Organization

~~Members will be all panel and subpanel chairmen. Others may be invited as required. Agency representatives are invited to attend as appropriate.~~
Members of the TSG are all panel chairpersons and working group/subpanel chairpersons. Agencies are encouraged to send experts for clarification of technical subjects as required. MC members may attend as well. 11/97

The TSG Chairman will be one of the panel chairmen. The operating procedures shall be in accord with the CCSDS Procedures Manual.

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